

STUDY ON THE INTEGRATION OF THE SEFFI PROCEDURE
WITH DIFFERENT TYPES OF HYALURONIC ACID

Hyaluronic acid and SEFFILLER



SEFFILLER®



Evaluation of the number, biophysical and multipotent characteristics of adipose derived stem harvested by SEFFI procedure and interaction with different type of hyaluronic acids. (2021) A. Gennai, B. Bovani, M. Colli, F. Melfa, D. Piccolo, P. R. Russo, M. T. Clementoni, S. Zia, B., Roda, A. Zattoni. INTERNATIONAL JOURNAL OF REGENERATIVE MEDICINE



A combination of tissue harvested and emulsified with hyaluronic acid can be used to counteract the loss of volume and skin aging of the face and body. This integrated approach, thanks to the SEFFI regenerative procedure, makes aesthetic treatment with hyaluronic acid a promising treatment for anti-aging facial therapy.

Objective of the study



The injection of autologous adipose-derived stem cells (ADSCs) into the dermal and subcutaneous layers promises regenerative benefits leading to rejuvenation. Injectable Hyaluronic Acid (HA) is a temporary filler that reduces the appearance of facial wrinkles and creases and creates structure and volume to the face and lips.

The study



SEFFILLER®

This study combined micro-fragmented adipose tissue grafting with hyaluronic acid filler, using three different types of hyaluronic acid, with and without emulsification procedure. Despite the lower cellularity of the emulsified samples combined with HA, the isolated cells could grow and expand in culture, thus demonstrating their proliferative capacity, showing "good quality" under all conditions.

Results



We evaluated the cellularity of the mesenchymal phenotype (defined as the number of adherent cells with mesenchymal phenotype per milliliter of adipose tissue) and the in vitro differentiation capacity into mesenchymal lines.

Cells could differentiate towards mesenchymal typology. They expressed mesenchymal markers by flow cytometry analysis and maintained their stemness potential.



Available online at www.sciencerepository.org

Science Repository



Research Article

Evaluation of the Number, Biophysical and Multipotent Characteristics of Adipose Derived Stem Cells Harvested by SEFFI Procedure and Interaction with Different Type of Hyaluronic Acids

Alessandro Gennai^{1*}, Bruno Bovani², Mattia Colli³, Fabrizio Melfa⁴, Domenico Piccolo⁵, Rosalba Russo⁶, Matteo Tretti Clementoni⁷, Silvia Zia⁸, Barbara Roda^{8,9} and Andrea Zattoni^{8,9}

¹Plastic Surgeon, Private Practice, Studio Gennai, Bologna, Italy

²General Surgeon, Private Practice, Perugia, Republic of San Marino, Italy

³Aesthetic Surgeon, Private Practice, Milano, Italy

⁴Cosmetic Physician, Private Practice, Mediaging Clinic Center, Palermo, Milano, Italy

⁵Dermatologist, Private Practice, Skin Center, Pescara, Italy

⁶General Surgeon, Private Practice, Estemed, Modena, Italy

⁷Plastic Surgeon, Private Practice, Laserplast, Milano, Italy

⁸Stem Sel srl, Bologna, Italy

⁹Department of Chemistry, "G. Ciamician", University of Bologna, Italy

ARTICLE INFO

Article history:

Received: 10 September, 2021

Accepted: 7 October, 2021

Published NA

Keywords:

Adipose-derived stem cells
autologous fat transfer
hyaluronic acid filler
stromal-vascular fraction
clinical regeneration applications

ABSTRACT

Background: Injection of autologous adipose-derived stem cells (ADSCs) and a stromal vascular fraction (VSF) into dermal and subdermal layers promises regenerative advantages by improving skin volume and rejuvenation. Injectable hyaluronic acid (HA) is a temporary dermal filler that, by improving skin hydration, reduces the appearance of fine lines and wrinkles, facial folds and creates structure and volume to the face and lips. This study combined the grafting of micro fragmented fatty tissue with the hyaluronic acid filler procedure, using three different types of HA.

Methods: Each sample of micro fragmented adipose tissue harvested using the superficial enhanced fluid fat injection (SEFFI) technique collected from 8 patients were equally divided into two specimens. One of these (EMU specimens) was emulsified by gently applying ten back-and-forth passages from one syringe to another to fluidify the tissue. The other one was not emulsified (Ctrl/NON-EMU specimen). Both EMU and NON-EMU specimens were divided into four aliquots: one served as control, and the others were combined with each of three tested hyaluronic acids. Afterward, we assessed the cellularity of mesenchymal phenotype (defined as the number of adherent cells with mesenchymal phenotype per milliliter of adipose tissue) and the *in vitro* capacity of differentiation in mesenchymal lineages.

Results: Despite low cellularity from emulsified samples combined with HA, isolated cells could grow and expand in culture, thus proving their proliferative ability, showing "good quality" in all conditions (Ctrl/NON-EMU, EMU, and combined with HA). The cells could differentiate towards mesenchymal lineages, express mesenchymal markers by flow cytometry analysis, and maintain their stemness potential.

Conclusion: The combination of emulsified harvested tissue with HA products can be exploited to counteract the loss of volume and skin aging of the human face and body. This approach to regenerative aesthetic treatment is a promising treatment for facial antiaging therapy.

© 2021 Alessandro Gennai. Hosting by Science Repository. All rights reserved.

*Correspondence to: Dr. Alessandro Gennai, Plastic Surgeon, Private Practice, Studio Gennai, Via delle Lame 98, 40122, Bologna, Italy; Tel: +390516494945; ORCID: 0000-0003-4105-725x; E-mail: agennai@mac.com

© 2021 Alessandro Gennai. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. Hosting by Science Repository. All rights reserved.