BACKGROUND AND PURPOSE: Highly cited publications are referred to as citation classics and can signify important contributions to a discipline. Although, citation classics in plastic surgery have been identified, none were published prior to 1960. Citation classics in earlier periods may contain the historical roots or intellectual origins of the field.1,2 We set out to identify these scholarly works and analyze their characteristics.

METHODS: A novel technique of citation analysis, referred to as Reference Publication Year Spectroscopy (RPYS) was employed to analyze the literature.3 The spectrogram revealed distinct peaks prior to 1960, which corresponded to 20 citation classics. These twenty references were then analyzed with respect to historical context, topic of interest, anatomical region, originality, and if authors were named for their findings (eponyms).

RESULTS: 20 distinct citation classics (published from 1851 to 1959) were identified accounting for 430 literature citations. Salmon’s “Arteres de la Peau” was the most cited reference, followed by Gillies’ “Principles of Plastic Surgery” and Neuber’s “Fat Grafting.” The theme of angiomes was highly represented. The majority of citation classics dealt with reconstruction of acquired defects (37%) and primarily focused on the head and neck regions (45%). 35% of clinical studies were noted for their originality, and five studies earned their authors eponymous distinctions.

CONCLUSION: The roots of modern plastic surgery began in the late 19th century with early efforts to describe cutaneous vasculature. Historical studies that either establish principles or lead to an advancement in our reconstructive methods have the best chance of achieving classical status.

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INTRODUCTION: Autologous fat grafting is an important adjunct to soft-tissue reconstruction in patients after oncologic resection of tumors. However, it is associated with multiple complications such as fat necrosis, oil cyst formation, and poor volume retention. There currently exist no tissue scaffold materials that aid in human fat graft retention. The purpose of this study is to demonstrate that our novel nanofiber-hydrogel composite serves as a tissue scaffold that improves fat graft retention and promotes enhanced vascularization within the graft.

METHODS: The following groups were studied: 100% lipoaspirate, 50% lipoaspirate/50% composite, 50% lipoaspirate/50% hydrogel, 75% lipoaspirate/25% composite, and 100% composite. 500uL of material was subcutaneously injected into both flanks of Foxn1nu NU/J male mice (2 injections per mouse). Fifteen mice were used per group. Mice were imaged using MRI at postoperative day (POD) 2, 28, 56, and 84 to assess graft volume retention. Grafts were explanted on days 7, 28, and 84. Immunohistochemistry (IHC) was performed on explanted grafts to evaluate graft vascularization and adipocyte morphology.

RESULTS: The 50% lipoaspirate/50% composite and 75% lipoaspirate/25% composite groups had the highest
volume retention on MRI volumetric analysis (38%, 41% respectively) on POD84. The 100% composite only group had the poorest volume retention (14%) on POD 84. On IHC, groups containing the nanofiber-hydrogel composite demonstrated superior rates of angiogenesis and blood vessel ingrowth into the graft as compared to lipoaspirate and lipoaspirate/hydrogel only groups. Furthermore, adipocyte morphology was better preserved in groups containing the nanofiber-hydrogel composite.

**CONCLUSION:** Both groups containing a combination of lipoaspirate/composite exhibited superior volume retention at POD 84 compared to solely lipoaspirate or lipoaspirate/hydrogel combination. Furthermore, the combination of lipoaspirate and composite results in better volume retention compared to either group alone. As demonstrated through IHC, our nanofiber-hydrogel composite promotes higher degrees of angiogenesis than does 100% lipoaspirate or 50% lipoaspirate/50% hydrogel. The nanofiber-hydrogel composite better preserves adipose cell morphology in fat grafting. This has important clinical implications, as improved fat graft retention would save the patient the additional morbidity of undergoing multiple bouts of anesthesia and multiple surgical procedures.

**Autologous Adipose Tissue-Derived Mesenchymal Stem Cell Therapy Improves Skin Photo-Ageing**

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The purpose of the present clinical study was to investigate the effects of ADSC therapeutic introduction into the facial skin of patients with overt photo-ageing, with special attention to morphological modifications of the dermal extracellular matrix. The chosen strategy was to compare histology and histopathology of the treated and non-treated skin, harvested from patients that were going to be submitted to facial rejuvenation through surgical face-lifting.

This prospective, clinical, randomized study involved twenty healthy subjects, 4 males and 16 females, candidates for facial rejuvenation surgery (face lifting). They aged from 45 to 65 years. The study was done between September 2012 and June 2014. They were inhabitants of the northeast region of Brazil, where an extensive exposure to sun is expected, and they presented class IV (n= 9), and V (n = 11) Fitzpatrick’s classification of the skin [21]. Patients were treated according to the ethical principles of the Declaration of Helsinki 2000, and the present study was approved by the Brazilian Medical Investigation Ethical Board (Protocol no. 28063) and the Brazilian Clinical Trials Registry (RBR-2nn9y2).

Mesenchymal stem cells were obtained from lipoaspirates, expanded *in vitro*, and introduced into the facial skin of patients to be submitted after four months to a face-lifting surgery. The retrieved face skin was analyzed by immuno-cytochemistry for identification and quantification of the elastic matrix components, cathepsin-K, metalloelastase M-12, and macrophage M2 markers CD68, CD206 and heme-oxygenase-1.

**RESULTS:** A full *de novo* formation of oxytalan and elaunin fibers was observed in the sub-epidermal region, with full reconstitution of the papillary dermal-epidermal junction. Elastotic deposits in the deep dermis were substituted by a normal elastin fiber network. The coordinated removal of the pathologic deposits and their substitution by the normal ones was concomitant with activation of cathepsin-K and MPP12, and expansion of the M2 macrophage infiltration.

**CONCLUSION:** Adipose Derived Stem Cell therapy of solar elastosis fully regenerates skin extracellular matrix, with restoration of a normal elastin network in the sub-epidermal zone and substitution of elastic deposits by normal elastin fibers in the deep dermis. This may be a promising cell-therapy for sun-aged skin regeneration.

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