Adipose Derived Stem Cells and Growth Factors Applied on Hair Transplantation. Follow-Up of Clinical Outcome

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Abstract

Different studies show the need of immature adipose cell to induce the proliferation of bulge stem cells in order to kick off the anagen phase of hair cycle. Furthermore, the adipose derived stem cell, adipose progenitors, and growth factors secreted by mature adipocytes can help the wound healing and the vascular neogenesis. Nowadays, it is not known any protocol of tissue regeneration applied to hair transplantation, especially if aimed to the reconstruction of the main vascular network for the engrainment of transplanted hair and the healing process. The aim of the work is to investigate how the application of autologous cellular suspension obtained by Rigenera system, mechanical fragmentation procedure which allows to obtain a physiological saline solution consisting of a heterogeneous pool of cells rich in adipose derived mesenchymal stem cells and growth factors, helps the wound healing and engrainment of the transplanted hair. During hair restoration surgery, the adipose tissue recovered from the discard of follicular slicing, was processed using the Rigenera system. The obtained cell suspension was applied in the area of hair transplantation, increasing the natural background of adipocyte lineage and raising the amount of growth factors. In addition, the cellular suspension was applied to the suture on the occipital region. The cell population was characterized by FACS. The monthly evaluation of hair transplantation follow-up with photos and the patient’s impressions demonstrates that there is a faster healing of the micro-wound and a continuous growth of the transplanted hair even two months after the procedure, with a shortening of the dormant phase. In conclusion, this new approach aims to integrate regenerative medicine and hair restoration surgery in order to improve the outcome for the patient. It would be wonderful to continue this research to elaborate on the molecular cause behind this satisfying clinical.

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