

The Impacts of Hybrid and Hyaluronic Acid Fillers on Skin Regeneration Post-Operatively

ABSTRACT:

Introduction: Cells, growth factors, and cytokines interact uniquely during skin wound healing. Long-term comfort and reducing hospital costs and scars are being examined in wound treatments.

Aim of the Work: To compare the efficacy of Hybrid filler (hyaluronic acid +calcium hydroxylapatite) and hyaluronic acid filler on skin healing after induced incisions and evaluate the expression of cluster of differentiation 31 (CD31), matrix metalloproteinase-9 (MMP-9), wound healing biomarkers, using immunohistochemistry.

Materials and Methods: Three sets of three male Albino rats were randomly allocated to the 3rd, 7th, and 14th healing periods. Rats have three circular dorsal incisions. The top wound got hybrid filler (NEAUVIA STIMULATE®), the bottom right wound received hyaluronic acid filler (TEOSYAL RHA® 3), and the lower left wound was uninjected as a control.

Biopsies were taken from each rat on the 3rd, 7th, and 14th days to determine the expression of CD31 and MMP-9 using immunohistochemistry.

Results: The immunohistochemical analysis of MMP-9 demonstrated that both treatment groups showed high expression of MMP-9 throughout the whole period in contrast to the control group which revealed weak expression. Regarding CD31, the highest scores were for the hybrid filler group more than HA and control groups on all days. However, median scores of CD31 were higher in the HA group compared to the control group on the third and seventh days. Re-epithelialization on the fourteenth day was highest in the hybrid filler group followed by the HA group, and the control group was the lowest.

Conclusion: Rat skin healed faster with hybrid and HA fillers, they may enhance wound healing.