Facial Aging, Hyaluronic Acid Dermal fillers and Neocollagenesis: A Review

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Abstract
Features of aging in the human face involve a combination of changes over time related to facial skeleton, atrophy and hypertrophy of facial fat pads and age and environment related changes to the skin. Non-surgical approaches to rejuvenation of the aging face aim to address all these aspects including volume replacement, redistribution and skin rejuvenation. Dermal fillers have been used for many years for 2 and 3 dimensional volume replacement. The recent development and refinement of hyaluronic acid dermal fillers providing low immunogenic, variable density fillers that can be layered at a variety of depths has provided practitioners with a useful tool in the fight to reverse signs of aging. Recent studies have demonstrated that an additional benefit of the hyaluronic acid dermal fillers is that their presence acts to induce neocollagenesis in the treated skin, a rejuvenating effect that outlasts the longevity of the filler itself. This review looks at the aging face, the biology of aging skin, the processes and pathways involved in neocollagenesis in the skin and how cross linked hyaluronic acid dermal fillers in aged skin has been demonstrated to activate these pathways.

Conclusion
These studies demonstrate that changes in aged skin of reduced collagen production, reduced dermal cell proliferation, thinning of the epidermis and reduced EM tension can be reversed with the use of NASHA dermal filler injection into the dermis resulting in increased EM tension, stretching of dermal fibroblasts, stimulation of growth factors and dermal neocollagenesis, stimulation of dermal fibroblast and endothelial proliferation as well as keratinocyte proliferation in the epidermis. These responses to the dermal filler treatments lead to true rejuvenation of the treated skin with improved texture and elasticity and considering the prolonged lifespan of new collagen fibres are likely to persist beyond the longevity of the fillers themselves. They pose questions for consideration of new roles and techniques for these dermal fillers in the skin beyond their standard role of volume replacement for skin rejuvenation alone or in addition to other CIT treatments and for a role in wound healing and some collagen metabolism disorders.