

Treating the Aging Face: A Multidisciplinary Approach With Calcium Hydroxylapatite and Other Fillers, Part 1

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This is the first of a 2-part series. In this part, Dr. Werschler introduces the concept of envisioning the face both as an entirety and as a structure with 3 distinct regions, each of which may be more appropriate for one aesthetic product than for another.

Studies on the aging face sometimes focus on changes in proportion and balance. Changes in the surface and subsurface are associated with loss of the inverted triangle of youth. Treatment options for the aging face may be addressed by seeing the face in its entirety and also by seeing it as 3 regional areas. Each of these areas may require different protocols and products to restore facial balance and symmetry. Soft tissue fillers, including calcium hydroxylapatite, are multidisciplinary treatment options for dermatologists, facial plastic surgeons, and plastic surgeons.

Many of the articles written about the aging face focus on the balance, proportions, and geometry of the “triangle of youth.” This inverted triangle, with its broad base framed superiorly and laterally by the zygomata and its apex represented by the narrowing taper of the mandible as it descends into the mentum, symbolizes the vigor, fecundity, and attractiveness of youth and our perceptions of beauty and age (Figure 1).¹⁻⁴ Working against this balance and symmetry of the triangular shape of a youthful face, however, are

2 types of changes classically associated with the aging process: surface and subsurface changes (Figure 2).^{1,5}

SURFACE CHANGES

Most pigmentary changes may be traced directly or indirectly to photodamage, with endocrine and reproductive issues, trauma, and medications playing contributing roles. With regard to aging, surface changes of the face generally represent alterations in skin pigmentation and texture. Pigmentary alterations may include hyperpigmentation or hypopigmentation. Over time, hyperpigmentary changes may lead to solar lentigines, dyschromia, mottling, and an accelerated appearance of aging. Combinations of hyperpigmentation and hypopigmentation also may occur, sometimes referred to as “confetti pigmentation.”

Textural changes that occur with age may represent both intrinsic and extrinsic aging factors. Solar elastosis, solar acne of Favre-Racouchot, actinic keratoses, epidermal hypertrophy, and dermal atrophy with crinkles and wrinkles are all examples of extrinsic, primarily photo-damage, aging. Other textural changes (eg, seborrhic

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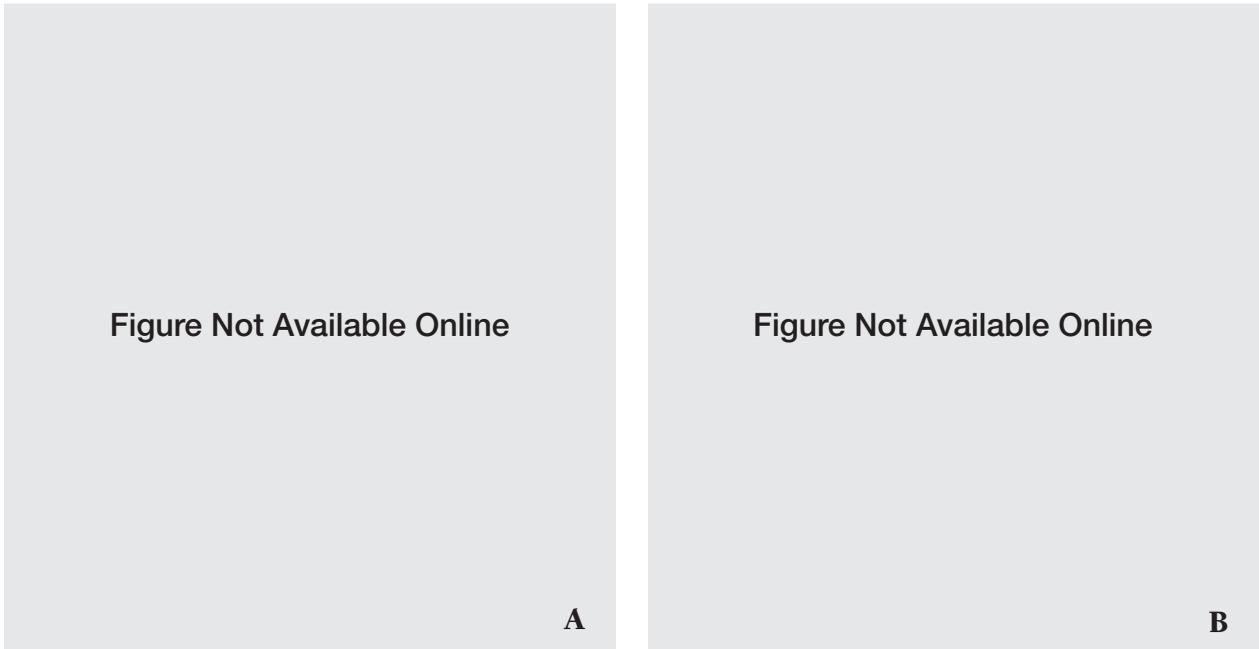


Figure 1. Over time, the shape of the face morphs from the shape of an inverted triangle (A) to that of a trapezoid or upright triangle (B). Illustrations courtesy of BioForm Medical, Inc.

keratoses, sebaceous gland hyperplasia, syringomata, changes in hair growth patterns) are principally intrinsic manifestations of aging. Changes in the optical tone, reflectivity, and transparency of the skin in differing lighting situations are typically the consequence of various combinations of the above factors.

SUBSURFACE CHANGES

Predictable subsurface changes fall into 2 categories: volume loss and resultant contour changes. Together, these changes lead to the visible alterations in facial geometry that visually convey an aged appearance.

Volume loss can arise in both hard and soft tissues. Soft tissue loss includes dermal atrophy, muscle atrophy, and fat redistribution and atrophy in the subcutaneous compartment. Hard tissue loss, especially pertinent to this discussion, may also be referred to as biometric volume loss from underlying bone, cartilage, and dental resorption (Figure 2). Sometimes referred to as osteopenia or

osteoporosis of the facial skeleton, this biometric volume loss is a commonly overlooked cause of the loss of youthful facial balance and contour and a major contributory component to the inversion of the triangle of youth into the pyramid of age.

Contour changes also include increasing skin laxity, with a breakdown or loss of elasticity of the dermis of the facial collagen mask (Figure 3). Combined with redistribution of fat, shrinkage of the facial skeleton, and loss of muscle tone, the dermis (especially with advanced photodamage) appears to be literally hanging over the underlying anatomy. The taut, firm skin of youth gives way to the sagging and jowling of age.

TREATMENT OPTIONS FOR THE 3 SECTIONS OF THE AGING FACE

Prior to developing a treatment protocol, it is often helpful to consider the face as 3 regional areas: the upper face, the midface, and the lower face (Figure 4). The upper face

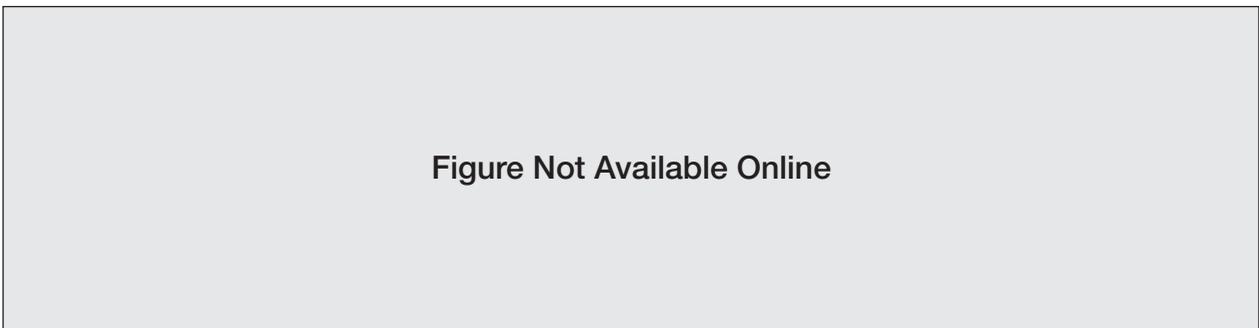


Figure 2. Progressive biometric volume loss over time in the aging face. Illustrations courtesy of Christie Thompson.



Figure Not Available Online

Figure 3. Contour changes in the aging face showing transformation from inverted triangle to inverted trapezoid and then to upright triangle. Illustrations courtesy of Christie Thompson.

begins at the hairline and extends down to the level of the zygomatic processes of the frontal bone. The midface is roughly the region inferior to the frontal bone and just superior to the oral commissures. The lower face extends from the oral commissures to the base of the mandible and may include the upper neck as well.

Typically, the upper face is treated with botulinum toxin type A, as the primary changes noted here are the result of repetitive muscular contractions. Addressing the midface and lower face areas, however, may require a more complex approach than treating the furrowed brow and glabella. For these areas, interventions, whether surgical or nonsurgical, are targeted toward those that provide robust strength, longevity, durability, and safety.⁶ Choices include soft tissue fillers such as calcium hydroxylapatite, poly-L-lactic acid, hyaluronic acids, lasers, light sources, radiofrequency and optical devices, chemical peels, topical products, and, of course, conventional plastic surgery. Emerging technologies will soon take their place in this list as well.

DEVELOPING A TREATMENT PROTOCOL

As physicians, we approach our patients' concerns with a well-defined, well-described analysis: we evaluate using appropriate means, such as visual observation, palpation, and diagnostic testing, in order to establish a diagnosis. Once we have made this diagnosis, we move on to prescribe a treatment plan appropriate to the patients' needs, desires, and risk tolerance. This analytic approach of diagnosis and prescription is one of the central tenants of medicine. This holds true every bit as much for elective, desire-based medicine as it does for disease-based interventions.

As a corollary, when we assess patients with aesthetic concerns, the same methodology may be employed (ie, diagnosis of concern[s] and prescribing of treatment plan). By systematically evaluating the presentation of changes and assessing intervention options, we can more comprehensively address the issues associated with the aging

appearance in general and the relative contributory components in particular. Progressive volume loss and contour changes are essential components of aging and may be addressed as part of a comprehensive approach to restoring the facial balance and symmetry of a more youthful visage. Arguably, they are just as important, if not more so, than the treatment of specific lines, folds, and wrinkles.

In the past, tension lifting procedures were thought to address volume and contour loss as part of the repositioning of lax, redundant tissue. By the removal of excess cutaneous tissue and the tightening of the underlying supporting framework, a certain degree of youthfulness was created. Ultimately, however, there was nearly always



Figure Not Available Online

Figure 4. A tripartite view of the face. Illustration courtesy of BioForm Medical, Inc.

TREATING THE AGING FACE

something left to be desired in the patient who had undergone a face-lift.

With a deeper appreciation for the intricacies of the aging face, especially regarding the concept of youthful balance and proportion, our approach has expanded to include the use of volumetric lifting both as an alternative to tension lifting and as a complement to it. This volumetric approach, sometimes referred to as revolutionization, may be accomplished with internal mobilization of neighboring tissue, autografting of fat, permanent facial implants, or use of soft tissue augmentation with injectable products, collectively termed fillers. Fillers may be used to restore volume lost over time, contour facial anatomy, and reestablish the balance and proportions desired by the patient.

SUMMARY

The use of fillers to accomplish volumetric lifting has evolved from their original use to correct more superficial lines and wrinkles. As more products have become available, each with different features and benefits, the armamentarium has expanded to the point where, today, a bevy of products allows the aesthetic physician to literally shape, mold, contour, and volumize a patient's face

to the desired end point. Accelerating this trend has been the patient demand for less invasive techniques, with less risk, downtime, and cost, to improve the aging face.⁷

In Part 2 of this 2-part series, we will examine the use of calcium hydroxylapatite in particular and other soft tissue fillers as appropriate for a treatment approach known as regional aesthetic volume enhancement.

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