

Illusion of Volume Loss

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Facial Plast Surg 2015;31:80–87.

Abstract

Facial aging can create an appearance of volume loss and responds to volume enhancement in certain clinical scenarios. Actual fat loss is an illusion created by the inter-relationship of the different tissue types. The purpose of this article is to provide the anatomical, clinical, and research evidence to differentiate the contributions to facial aging from gravity's effects on soft tissue, fat loss, and skeletal remodeling, explaining the illusion.

Keywords

- ▶ volume loss
- ▶ face-lift
- ▶ rhytidectomy
- ▶ aging face
- ▶ facial rejuvenation

It has been clearly stated in the literature for almost 50 years that changes in all four structural tissue types—skin, fat, muscle, and bone—contribute to facial aging.¹ However, the extent to which changes in each of these tissues contribute to aging continue to be debated. The debate is complicated by the fact that proportional relationships can be deceiving as separate structures age and influence the perception of adjacent structures. Thus, an illusion can be created of a change in one tissue type where the change is actually in a different type (– Fig. 1).

As early as 1911, volume restoration was advocated as a technique for facial rejuvenation.^{2,3} However, for most of the 20th century, the “surgical model” stated that the majority of facial aging was because of the gravity's effects on the facial soft tissue; therefore, lifting, repositioning, and excising excess soft tissue was the optimal solution to restore the face to its prior form. There were however, limitations and inadequacies in the esthetic outcomes, especially, when associated with techniques requiring skin tension, which lead to questioning of the “surgical model.” The apparent inability of the “surgical model” to consistently address facial aging led to the recent popularity of the “volume model.” This model emphasizes deflation and touts the resultant folds and hollows seen in the aging face as evidence of facial fat loss causing the majority of aging changes. Advances in soft tissue fillers and fat transfer techniques, as well as the ease, cost, and consumer demand for the “volume model” has fueled growth of this approach, despite similar evidence of limitations and inadequacies in esthetic outcomes.

Recently, several studies have documented the neglected contribution of the facial skeleton in understanding the aging process.^{4–7} By understanding the complex three-dimensional bony changes associated with the aging process, both the limitations of the surgical model and the successes of the volume model can be better understood.

It is our view, that facial aging is not because of significant facial fat loss, but is an illusion of loss produced by several factors. First, the normal physiology of soft tissue is to stretch secondary to intrinsic force, such as weight gain or pregnancy, and explains the success of tissue expansion techniques where extrinsic force is used to create soft tissue redundancy to repair soft tissue deficits.⁸ The extrinsic force of gravity on facial soft tissue also produces soft tissue redundancy, and differs in appearance from true cases of volume loss, such as HIV wasting syndrome, where the soft tissue retracts, resulting in an ill appearing rather than aged face. Second, the anatomical limitations restricting the ptotic, redundant facial soft tissue's movement produces similar hollows, folds, and signs of deflation in the face, mimicking volume depletion. Third, skeletal changes occur in the exact regions that volume enhancement have their greatest success: the medial cheek and periorbital region. In addition, the facial bone loss also explains the limitations in the “surgical model” approach to the aging face. We will present evidence to support these contributing factors that create the volume illusion and challenge the esthetic community to produce contradictory evidence of facial fat loss as the major contributor to the aged face.

Issue Theme Management of Facial Volume; Guest Editors, Edward D. Buckingham, MD, and Mark Glasgold, MD

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Tel: +1(212) 584-4662.

DOI <http://dx.doi.org/10.1055/s-0035-1544250>.
ISSN 0736-6825.