Fillers and the “Three Curves of Youth”

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ABSTRACT

A 40-year-old Asian female presented complaining of looking tired. She had no significant medical history and was in good health. She had received botulinum toxin injection in the glabellar area routinely over the last several years but had no history of injectable fillers.


INTRODUCTION

Americans spent nearly $10.7 billion on cosmetic procedures in 2011. Of that total almost $6.6 billion was spent on surgical procedures; $1.9 billion on injectable procedures; $1.8 billion on skin rejuvenation procedures. Recent data imply that patients are addressing aging changes earlier than in the past. Although baby boomers have traditionally “led the pack,” recent statistics from the American Society of Aesthetic Plastic Surgeons show that “GenX’ers (age 35–50) had the most procedures—more than 4 million and 44% of the total while baby boomers (age 51–64) accounted for 28%.1 Therefore, the patient presented here is in that younger demographic.

CASE VIGNETTE

A 40-year-old Asian female presented complaining of looking tired. She had no significant medical history and was in good health. She had received botulinum toxin injection in the glabellar area routinely over the last several years but had no history of injectable fillers. Before and after injection photographs are shown in Figure 1.

She was treated with one vial of poly-l-lactic acid (Sculptra Aesthetic) (9 cc dilution, hydrated 48 hours) in the temples (3 cc total), midface (4 cc total), pyriform aperture (1 cc total), and mandible (1 cc total). A 25-gauge, 1.5 in needle was used in all locations except the pyriform and mandibular area. In this location, a 26-gauge, 5/8 inch needle was used. A reflux maneuver was performed before all injections to prevent inadvertent injection into the vasculature. Note the improvement in the position of the nose and upper lip, as well as decreased shadows in the central face (Figures 2-4).

Next, Restylane (2 cc total) was injected with a 27-gauge cannula in the medial brows and forehead (see Figure 3). (A small area in the mid/lateral brow—lateral to the supraorbital neurovascular bundle—was anesthetized with 1% xylocaine injected with a 30-gauge needle. The needle was withdrawn, and as there was no bleeding in the area, a 22-gauge needle was injected into the same opening just to the level of the deep dermis. This was then withdrawn, and the 27-gauge cannula inserted through this opening.) Note the projection of the brows and the contour of the forehead.

Next, 0.8 cc Juvéderm was injected into the deep fat pad of the lower lip only (nothing was placed in the top lip—change in length and shape is from supraperiosteal treatment of the pyriform aperture) as well as the submentalis fat compartment with a 27-gauge cannula utilizing the same technique detailed (Figure 5). Note how the increased length of the chin here, in conjunction with the “shortening” of the upper lip, create a “golden” ratio of 1:1.6 in the lower third of the face. Note also that injection into the deep fat pad of the lips serves to evert the lip, as well as give a gradual change at the “white roll” not achieved as well with injection into the vermilion border alone. Finally, 25 units of botulinum toxin (Botox Cosmetic) was injected into the
FIGURE 2. Augmentation around the pyriform aperture in a patient with congenital hypoplasia (as well as in older patients with bony remodeling) provides underlying support for the overlying soft tissue envelope improving the position of the nose and upper lip and the prominence of the philtrum and cupid’s bow as seen in this patient status post solid polyethylene pyriform implant. 2a) Baseline 2b) Status post surgical implant 2c) Schematic illustration of implant position. Caution must be exercised in this area to avoid inadvertent injection into the angular artery. A low viscosity product like PLLA injected with a 26-gauge, 5/8-inch needle allows for reflux prior to injection of product and is the safest choice in my hands.

FIGURE 3. This schematic illustrates some of the superficial fat compartments of the face. The patient presented here was treated with PLLA in temple (deep to the deep temporalis fascia) and with 2 cc of hyaluronic acid under the brow as well as in the forehead fat compartments.

FIGURE 4. a-c) The deep medial cheek fat (red arrow) lies under the orbicularis oculi at its superior border. It is bordered laterally by the medial fat compartment of the suborbicularis oculi fat (SOOF), which is bordered laterally by the lateral fat compartment of the SOOF as seen in Figure 4a. The presence or absence of this deep medial cheek fat is a primary determinant of the anterior projection of the face. Note that the “V shaped deformity” in the infraorbital area as well as the nasolabial fold improved with injection into this fat compartment alone (Figure 4b-4c). This example illustrates the concept of how loss of volume in one compartment may lead to visibility or pseudoptosis of another. The patient presented here was treated with PLLA in the deep medial cheek fat pad.

FIGURE 5. 5a) Vertical sectioning of the lower lip in a dissection of a cadaver specimen of an aged individual shows ample deep submuscular fat. This specimen’s lower lip showed anterior projection and eversion similar to that typically seen in a much younger individual (5b,c) rather than that typical of an aged individual (5d,e) likely due in part to the presence of this deep fat. The submentalis fat compartment (labeled SMF below) deep to the mentalis muscle (labeled M below) is pictured in Figure 5f. Augmentation/restoration of deep volume here helps to soften the labial mental crease. The patient presented here was treated in the deep fat pad of the lower lip as well as in the submentalis fat pad with 0.8 cc of hyaluronic acid. She was also treated with 0.4cc PLLA/side placed deeply on the anterior mandible between the depressor anguli oris and the mentalis. A reflux maneuver was done before injection to avoid inadvertent intravascular injection. Taken together, these injections serve to “lengthen” the chin.

DISCUSSION

In order to solve any problem, one must first define the problem, come up with a solution, and then successfully execute the solution.

The youthful face has an ample amount of volume that is evenly distributed, which displays a smooth transition from one area to another and confers a well-rounded 3-D topography delineated by a series of arcs and convexities. A youthful face also represents a point in time when a particular set of


skeletal proportions is ideal for their overlying soft tissue envelope—a place we likely grow into from infancy and away from with age.3,4

In addition to gains in technical insights that have improved our understanding of how to use the currently available products to best advantage, where to use these products to best advantage in facial filling has also improved enormously with ever-evolving insights into the changes observed in the aging face. Current literature reveals that these changes are occurring in all tissue structures of the face and that these changes are interdependent (i.e., a change in one area may lead to a cascade of predictable, secondary events).5 The central role of volume loss and deflation in the aging face has been eloquently illustrated by Lambros in a longitudinal photographic analysis of more than 100 patients spanning an average period of 25 years.6 This work, in conjunction with the work on changes seen with age related skeletal remodeling postulated by Pessa et al7 and now supported by numerous studies8 as well as the landmark studies carried out at University of Texas Southwestern by Rohrich, Pessa et al in the anatomy of facial fat and its contribution to the changes observed in the aging face9,10 are truly “game changers.” The value of this work lies in its implications for treatment. Although the sequence of events as we age is predictable, its pace is not. This holds true not just between individuals, but between different structural layers in one individual as well. Recognition of where volume has been lost (or sometimes lacking in the first place) in each individual will greatly enhance our ability to achieve optimal and natural-looking results, by enabling us to treat the specific morphology of a particular individual at a particular point in time with site-specific corrections. In my experience, this anatomically based approach to individual facial morphology seems to almost effortlessly improve the shape, contours, topography, and proportions of the face treated in this manner.

REFERENCES


Dr. Fitzgerald has eloquently portrayed the next era of cosmetic medicine with the use of non-invasive regimens using neuromodulators and the highly selective use of current U.S. FDA-approved fillers. This is based upon her tremendous knowledge of how the human face ages anatomically. Her astute analysis of this patient’s early aging process and how she’s approached it undeniably the next era of how to maximize the use of FDA fillers and neuromodulators.

The selective use of poly-l-lactic acid in the midface pyriform aperture, mandible, and temporal areas (the earliest areas to show aging as shown by anatomic studies done at the University of Texas Southwestern) portray how subtle improvements in these key anatomic areas will rejuvenate a patient’s appearance in a natural manner. The ability to artistically perform a combination of injecting Juvéderm to the deep fat compartment of the lip to enhance overall upper lip shape as well as in submentalis fat to give more proportionality to the lower face is remarkable. Dr. Fitzgerald has set a high bar for this new era of non-surgical facial rejuvenation with her astute facial analysis and choice of optimal fillers.

The key to future aesthetic non-surgical rejuvenation with neuromodulators and fillers so eloquently demonstrated by Dr. Fitzgerald’s work is a precise analysis of the early aging process and the capability to restore the deep facial anatomy, specifically, the deep facial fat compartments. Dr. Fitzgerald is to be congratulated for her incredible analysis and expertise in the unique use of multiple different fillers and neuromodulators to achieve a natural-looking, youthful face.

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