The Anatomy behind Eyebrow Positioning: A Clinical Guide Based on Current Anatomic Concepts

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Background: The position of the eyebrow is known to reflect emotional status and to provide a plethora of nonverbal information. Although the eyebrow has no direct attachment to underlying bone, it is subject to the interplay between the various periorbital muscles, which when acting together, permit important nonverbal cues to be conveyed. Understanding the balance and interplay between these muscles is of crucial importance when targeting the periorbital area with neuromodulators. The authors' aims were to summarize current anatomic and clinical knowledge so as to provide a foundation that physicians can rely on to improve and increase the predictability of patient outcomes when treating the periorbital region with neuromodulators for aesthetic purposes.

Methods: This narrative review is based on the anatomic and clinical experience of the authors dissecting and treating the periorbital region with specific focus on the glabella and the forehead.

Results: This narrative review covers (1) a brief description of the relevant periorbital muscle anatomy, (2) an analysis of each muscle's contribution to various facial expressions, and (3) an anatomic and physiologic simulation of the muscular effects of specific neuromodulator injection sites.

Conclusion: By understanding functional anatomy of the periorbital muscles and combining this knowledge with individualized assessment and treatment planning, it is possible to achieve aesthetically pleasing, predictable, and reproducible treatment outcomes that positively impact perception of nonverbal cues when administering neuromodulators. (*Plast. Reconstr. Surg.* 149: 869, 2022.)

Recognizing faces, classifying them as familiar or unknown, or estimating their emotional status based on their facial expression pattern have been studied extensively in the past.[1–3] Results have indicated that the periorbital area is most frequently inspected at first as it provides the greatest amount of information per area.[4,5] The periorbital area is also crucial in determining whether a face has been seen before, classification of gender, and expression categorization.[4,6–8] Interestingly, however, the perioral region was identified as the facial region first visually targeted when attempting to glean information about an individual's emotional state and to decide if the individual has an expressive or nonexpressive face.[5,9,10] These results suggest that areas of facial recognition depend on the task (i.e., the information needed determines the facial region targeted).[11] The periorbital region conveys a plethora of information that can be decoded at first sight; this is based on both static and dynamic features, whereas the perioral area conveys information based only on dynamic movement.[12]

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Eyebrow position is known to reflect a person's emotional status and to provide a plethora of nonverbal information. This is possible as the eyebrow has no direct attachment to underlying bone but is subject to the interplay between multiple periorbital muscles. An understanding of the balance and interplay between these muscles is of crucial importance when addressing the periorbital area with neuromodulators, soft-tissue fillers, or surgical procedures,[13–16] as each can influence eyebrow position and the resultant nonverbal information that is conveyed.

The following narrative review summarizes and expands on the current anatomic concepts behind eyebrow positioning and attempts to provide a concise foundation for a variety of clinical applications.

MATERIALS AND METHODS

This narrative review is based on the anatomic and clinical experience of the authors dissecting and treating the periorbital region, with specific focus on the glabella and forehead. The clinical correlations described and the recommendations presented herein are solely the authors' opinion and should be regarded as such.

RESULTS

Muscles of the Periorbital Region

The muscles of the periorbital region should be considered a biomechanical unit as they are all connected and have combined effects on the overlying skin. These four muscles—the frontalis, procerus, orbicularis oculi, and corrugator supercilii muscles—cannot exert skin movement alone but, rather, always collaboratively, such that each individual muscle influences the other muscles. Another reason to consider the periorbital muscles as one unit is their area of insertion. All periorbital muscles connect with the skin of the hairy eyebrow or with the skin of the glabella. This arrangement is similar to the connection between muscles and skin observed in the nasolabial fold and perioral region.[17–19] Here, the muscle fibers, the subdermal connective tissue, and the subdermal fat are interconnected and strongly adherent to each other. This specific type of subcutaneous architecture allows precise and direct skin movements, as there is no gliding plane composed of a separate fatty layer to camouflage underlying muscle activity. The direct interaction is needed to allow for minute and precise skin movements that would not be possible without a direct connection between muscle fibers and dermis. To better understand their combined actions, individual muscle activity will first be highlighted.

Procerus Muscle

The procerus muscle originates from the nasal bone at the root of the nose in the midline and paramedian plane (Fig. 1). Here, the muscle is located deep to the orbicularis oculi muscle and in the same plane as the origin of the corrugator supercilii muscle. The procerus muscle inserts into the skin of the glabella at the level of the upper margin of the eyebrow hairs. This cutaneous insertion, however, is variable in its craniocaudal extent and is subject to anatomic variation. As the procerus muscle is a three-dimensional structure (and not a two-dimensional flat sheet), a majority of its fibers connect with the central fibers of the frontalis muscle in the subdermal plane. The number of muscle fibers connecting with the procerus muscle is also subject to anatomic variation, but together the procerus muscle and the frontalis muscle form the medial vertical axis of movement (Table 1).

Corrugator Supercilii Muscle

The corrugator supercilii muscle originates from the superciliary arch of the frontal bone in the paramedian plane; it does not reach the midline and hence there are no connections to bone in the midline (Fig. 2). The respective surface landmark would be 1 to 2 mm medial and inferior to the medial end of the noncontracted hairy eyebrow. At its bony origin, no direct connections to the procerus muscle or to the orbicularis oculi muscle are detectable on anatomic dissection. The corrugator supercilii muscle becomes more superficial as it moves laterally and cranially, merging with the orbicularis oculi muscle in the medial third of the hairy eyebrow; the orbicularis oculi muscle is located subdermally and is penetrated by the corrugator supercilii muscle, which then attaches to the underside of the dermis. The corrugator supercilii muscle is pierced by branches of the supratrochlear nerve when passing the supratrochlear foramen/notch, and some authors describe two muscular heads of the corrugator supercilii muscle: a medial head and a lateral head.[20] Together with the supraorbital horizontal fibers of orbicularis oculis muscle and the lateral fibers of the procerus muscle, the corrugator supercilii muscle forms the medial contractile component of the horizontal axis of movement (Table 1). The corrugator supercilii muscle does not extend cranially past the upper margin of the hairy eyebrow as it is bounded here by the inferior frontal septum,[21] a fibrous osteomuscular separation located 1 to 1.5 cm cranial to the superior orbital rim.

Fig. 1. Facial painting of the procerus muscle on the skin surface of a male volunteer. (*Left*) The skin without marking. (*Center*) The respective muscle at rest. (*Right*) The skin contracted to simulate the underlying muscle movement.

Orbicularis Oculi Muscle

The subdermally located orbicularis oculi muscle is a flat, two-dimensional circular muscle that can be separated into three subunits: pretarsal orbicularis oculi muscle, preseptal orbicularis oculi muscle, and orbital orbicularis oculi muscle (Fig. 3). The separation between the preseptal and orbital orbicularis oculi muscle is located at the anterior orbital rim and corresponds to the inferior margin of the hairy eyebrow and the palpebromalar groove.[22] In the periorbital area, the orbicularis oculi muscle can be classified structurally into medial and lateral vertical fibers and into supraorbital and infraorbital horizontal fibers (similar to a square). These vertical and horizontal fibers contribute to the medial vertical axis of movement, the horizontal axis of movement, and the lateral vertical axis of movement, respectively (Table 1). The medial vertical orbicularis oculi fibers connect to the lateral fibers of the procerus muscle approximately at the level of the eyebrows in the paramedian plane. The supraorbital horizontal orbicularis oculi fibers overlie in the medial third of the eyebrow the descending fibers of the frontalis muscle; this portion of the orbicularis oculi muscle is called the depressor supercilii muscle.[23] In the lateral third of the eyebrow, the orbicularis oculi muscle and the lateral fibers of the frontalis muscle fuse and form the frontalis-orbicularis angle, which has been reported to be, on average, 88.7 degrees.[24]

Frontalis Muscle

The frontalis muscle (also called the ventral or anterior belly of the occipitofrontalis muscle) is a flat two-dimensional muscle without any bony connection in its anterior aspect (Fig. 4). The frontalis muscle is enveloped by the dividing galea aponeurotica, comparable to a sleeping bag: superficially, the suprafrontalis fascia covers the frontalis muscle and connects the muscle fibers to the dermis,[25]

Table 1. Overview of the Three Axes of Eyebrow Movement Revealing the Function of Each of the Periorbital Muscles

Axis of Eyebrow Movement	Muscle Function
Horizontal axis	Medial movement effected by lateral PM, supraorbital horizontal OOM, CSM Lateral movement effected by supraorbital horizontal OOM, lateral FM
Medial vertical axis	Cranial movement effected by central FM Caudal movement effected by central PM, medial vertical OOM
Lateral vertical axis	Lateral FM CSM, lateral vertical OOM

PM, procerus muscle; OOM, orbicularis oculi muscle; CSM, corrugator supercilii muscle; FM, frontalis muscle.

Fig. 2. Facial painting of the corrugator supercilii muscle on the skin surface of a male volunteer. (*Left*) The skin without marking. (*Center*) The respective muscle at rest. (*Right*) The skin contracted to simulate the underlying muscle movement.

whereas deep, the subfrontalis fascia separates the muscle from the deep forehead compartments located in the supraperiosteal plane.[21] The shape and the muscle fascicle orientation of the frontalis muscle are subject to anatomic variation, as in some cases a central tendon (aponeurosis) separates the left from the right frontalis muscle.[26] A recent study showed that if an aponeurosis is present, the muscle fascicle angle is increased (i.e., oriented more laterally), and the skin movement is likewise obtuse and points more toward lateral.[27] Another recent study provided evidence that the frontalis muscle has bidirectional movement, with the lowermost 60 percent of the frontalis muscle

Fig. 3. Facial painting of the orbicularis oculi muscle on the skin surface of a male volunteer. (*Left*) The skin without marking. (Center) The respective muscle at rest. (*Right*) The skin contracted to simulate the underlying muscle movement.

Fig. 4. Facial painting of the frontalis muscle on the skin surface of a male volunteer. (*Left*) The skin without marking. (*Center*) The respective muscle at rest. (*Right*) The skin contracted to simulate the underlying muscle movement.

acting as an eyebrow elevator, whereas the upper 40 percent acts as a hairline depressor.[28] These two antagonistic muscle movement patterns converge at the line of convergence that represents the center of movement for the contracting frontalis muscle fibers inside its "sleeping bag." The frontalis muscle fuses directly with the orbicularis oculi muscle in the lateral third of the eyebrow.

Movements of the Periorbital Area Based on Facial Rhytides

Subdermal muscular movement can be visible on the skin surface if a connection is present between muscle and the underside of the dermis. In the face, a variety of transmission modalities exist, as follows[29]:

1. Direct transmission, between muscle fibers and the overlying skin (eyebrow, perioral)
2. Indirect transmission, between muscle fibers by means of a three-dimensional connective tissue network [i.e., between the superficial musculoaponeurotic system and overlying skin (forehead, medial midface, platysma)]
3. No transmission, meaning no direct fascial connection between muscle and skin (lateral midface at masseter muscle)

The shape and orientation of skin rhytides is based on skin type, skin thickness, soft-tissue thickness, and frequency of muscle activity repetition. Dynamic facial rhytides can transform into static facial rhytides during the process of facial aging.

Horizontal Glabellar Lines

Horizontal glabellar lines are the result of muscular contraction of the procerus muscle. Here, the point of insertion (i.e., skin of the glabella) is approximated to the muscle's bony origin (i.e., root of the nose). This line is the result of the action of the medial vertical axis of movement with a dominance of the only depressor muscle, the procerus (Fig. 5).

Vertical Glabellar Lines

Vertical glabellar lines are predominantly the result of muscular contraction of the corrugator supercilii muscle, along with the contraction of the lateral procerus and the supraorbital horizontal orbicularis oculi muscle. Skin thickness, skin type, and glabellar soft-tissue thickness can influence the shape, depth, and angle of these lines. Vertical glabellar lines are the result of the action of the horizontal axis of movement. In general, horizontal and vertical glabellar lines occur together as they are components of glabellar frowning during basic facial expressions (Fig. 6).[30]

Horizontal Forehead Lines

Horizontal forehead lines are the result of frontalis muscle contraction. In general, the frontalis muscle fascicles are vertically oriented, resulting

Fig. 5. Three-dimensional skin vector analysis of a male volunteer performing upper facial muscular contraction to exemplify the formation of the horizontal glabellar line. (*Left*) The upper face at rest; (*center*) the respective facial line; and (*right*) the resulting skin movements, with skin vectors pointing in the direction of the muscular contraction. The *color-coded scales* show the resulting length (in mm) of the skin movement, with *red areas* indicating a greater magnitude in skin movement. Note the increased horizontal glabellar line compared to Figure 6.

in horizontal or transverse frontal rhytides. If the muscle fascicle angle is obtuse, a more undulated or wavy rhytid shape is noted but is still perpendicular to the muscle contraction pattern. The different shapes, lengths, and forms of horizontal forehead lines can be predicted by underlying frontalis muscle morphology. The most lateral frontalis muscle fibers, especially if a wavy horizontal forehead line pattern is present, are located lateral to the temporal crest and should be considered during aesthetic treatment of the forehead (Fig. 7).

Fig. 6. Three-dimensional skin vector analysis of a male volunteer performing upper facial muscular contraction to exemplify the formation of the vertical glabellar lines. (*Left*) The upper face at rest; (*center*) the respective facial line; and (*right*) the resulting skin movements, with skin vectors pointing in the direction of the muscular contraction. The *color-coded scales* show the resulting length (in mm) of the skin movement, with *red areas* indicating a greater magnitude in skin movement. Note that separate activation of the procerus muscle and corrugator supercilii muscle is hardly possible due to their combined contribution to the "angry" facial expression.

Fig. 7. Three-dimensional skin vector analysis of a male volunteer performing upper facial muscular contraction to exemplify the formation of the horizontal forehead lines. (*Left*) The upper face at rest; (*center*) the respective facial line; and (*right*) the resulting skin movements, with skin vectors pointing in the direction of the muscular contraction. The *color-coded scales* show the resulting length (in mm) of the skin movement, with *red areas* indicating a greater magnitude in skin movement. Note that the formation of the line of convergence is clearly visible.

"Omega" Line Complex

The "omega" glabellar wrinkle pattern is the result of the formation of vertical glabellar lines in combination with frontalis muscle contraction and absence of procerus muscle contraction. In this specific pattern, the horizontal axis of movement is active and moves the eyebrow medially, resulting in vertical glabellar lines. The medial vertical axis of movement, however, shows elevator dominance (i.e., frontalis muscle) and/or weakness of its depressors (i.e., procerus muscle) resulting in the formation of horizontal lines in the forehead but not at the root of the nose. The confluence of vertical glabellar lines and the horizontal lines located at a variable height of the forehead result in the formation of the clinically observed omega wrinkle pattern (Fig. 8).

Lateral Canthal Lines

Lateral canthal lines are the result of the contraction of the subdermally located lateral component of the orbicularis oculi muscle. The muscle fiber orientation is arranged in a circular pattern around the orbit, with the resulting rhytides radiating from the center of contraction peripherally. The length and the depth of the rhytides depend on skin thickness and skin type as minimal subcutaneous fat is present; the length of the rhytides, however, depends on the morphology of the underlying orbicularis oculi muscle and is subject to anatomic variation (Fig. 9).

Anatomic and Physiologic Simulation of Selected Neuromodulator Injection Sites

The injections sites illustrated will be used to hypothesize on the resulting effects on eyebrow position if neuromodulators were to be administered at the respective site (Fig. 10). It is very important to note that the injection points shown are for the purposes of anatomic education and are not meant to represent clinical indications.

Injection Location 1 (Blue)

Targeted muscle: Bony origin of the procerus muscle, if administered in the supraperiosteal plane.

Resultant effect: Elevation of the medial third of the eyebrow and slight increase in distance between the medial heads of the hairy eyebrows. Reduction in horizontal glabellar line severity.

Cause of effect: The procerus muscle is affected, resulting in an increase in dominance of the elevators of the medial vertical axis (i.e., the central portion of the frontalis muscle). As the frontalis muscle also attaches to the skin of the glabella, injection here is capable of elevating the medial thirds of the eyebrow. The increase in distance between the medial margins of the eyebrows, also referred to as splaying, is potentially caused by weakening of the lateral portion of the procerus muscle, which is part of the horizontal axis. This increases the dominance of the laterally pulling muscles, the supraorbital horizontal orbicularis oculi muscle

Fig. 8. Three-dimensional skin vector analysis of a male volunteer performing upper facial muscular contraction to exemplify the formation of the omega frown complex. (*Left*) The upper face at rest; (*center*) the respective facial line; and (*right*) the resulting skin movements, with skin vectors pointing in the direction of the muscular contraction. The *color-coded scales* show the resulting length (in mm) of the skin movement, with *red areas* indicating a greater magnitude in skin movement. Note that the movement of the different movement axes results in circular skin movement of the forehead.

and lateral frontalis muscle, which could result in increased intereyebrow distance (Table 1).

Injection Location 2 (Yellow)

Targeted muscle: Bony origin of the corrugator supercilii muscle, if administered in the supraperiosteal plane.

Resultant effect: Elevation of the middle and lateral third of the eyebrow (not medial) and reduction in vertical glabellar line severity.

Cause of effect: The medial portion of the corrugator supercilii muscle close to its bony attachment is weakened, resulting in an overall increase in the distance between bony origin and dermal

Fig. 9. Three-dimensional skin vector analysis of a male volunteer performing upper facial muscular contraction to exemplify the formation of the lateral canthal lines. (*Left*) The upper face at rest; (*center*) the respective facial line; and (*right*) the resulting skin movements, with skin vectors pointing in the direction of the muscular contraction. The *color-coded scales* show the resulting length (in mm) of the skin movement, with *red areas* indicating a greater magnitude in skin movement. Note the displacement of skin in the middle and lower face.

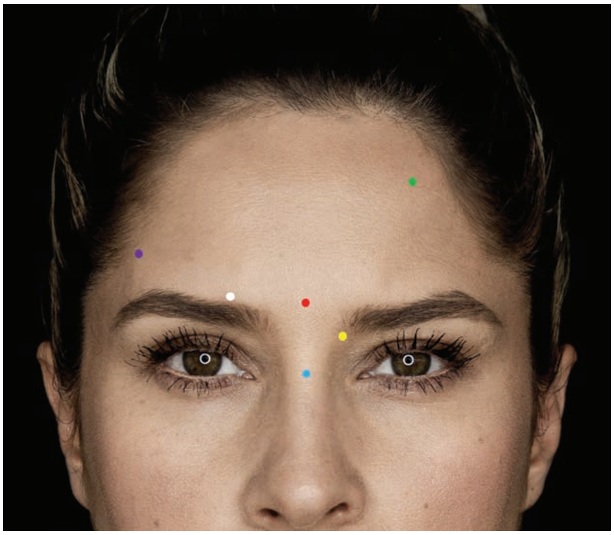

Fig. 10. Illustration of various (*color-coded*; see text) injection points of the forehead, glabellar, and periorbital regions. Each injection point, its respective underlying anatomy, and the physiologic consequences if one of the *color-coded points* is targeted with a neuromodulator is explained in the text.

insertion. The lateral portion, however, is not affected and is thus able to contract but in a more lateral position compared to the untreated status; this ability of the lateral corrugator supercilii muscle to still contract is appreciated by patients as it permits natural eyebrow movement during various facial expressions.

Injection Location 3 (Red)

Targeted muscle: Dermal insertion of the procerus muscle and fusion between the central frontalis muscle and the procerus muscle, if targeted subcutaneously; the latter is subject to anatomic variation.

Resultant effect: Reduction in horizontal glabellar line severity, increase in intereyebrow distance, potentially depression of the medial third of the eyebrow, and increased elevation of the tail of the eyebrow.

Cause of effect: The reduction in horizontal glabellar line severity and the increase in intereyebrow distance are the result of weakening of the procerus muscle. The depression of the medial third of the eyebrow is caused by weakening of the central fibers of the frontalis muscle, with resultant increase in dominance of the depressors of the medial vertical axis. If the central frontalis muscle is affected, it can be assumed that the effectiveness of the injection into the procerus muscle is reduced, limiting the secondary weakening of the procerus muscle as a depressor of the medial vertical axis and thus compensating for the medial eyebrow depression. Affecting the central frontalis muscle can result in a hypercontractile state of the lateral frontalis muscle, elevating the tail of the eyebrow as this muscle is the only elevator of the lateral vertical axis. This can present clinically as a peaked lateral brow, sometimes referred to as "Spock"-shaped or "Mephisto"-shaped eyebrow. The lateral frontalis muscle hypercontractile state is increased if the central frontalis muscle is reduced in muscle mass (i.e., by the presence of a central aponeurosis) and/or if the muscle fascicle angle is increased, which can be analyzed clinically by the presence of wavy horizontal forehead lines.

Injection Location 4 (White)

Targeted muscle: Supraorbital horizontal component of the orbicularis oculi muscle (i.e., depressor supercilii muscle), if the product is administered subdermally.

Resultant effect: Slight reduction in vertical glabellar lines and reduction of the muscular prominence of the medial supraorbital area.

Cause of effect: The medially located supraorbital horzontal component of the orbicularis oculi muscle is targeted, reducing its ability to move the eyebrow medially; this can result in reduction of vertical glabellar lines. This injection location can be utilized in addition to the injection of the bony insertion of the corrugator supercilii muscle to reduce secondary surface irregularities caused by orbicularis oculi muscle contractions. No significant eyebrow depression is expected when injecting into this point subdermally, as the frontalis muscle is deeper than the orbicularis oculi muscle here and can thus maintain its role as eyebrow elevator.

Injection Location 5 (Green)

Targeted muscle: Lateral component of the frontalis muscle.

Resultant effect: Reduction in severity of horizontal forehead lines.

Cause of effect: If injected cranial to 60 percent of the total forehead length (i.e., location of the line of convergence), the hairline depression segment of the frontalis muscle is affected; this will increase the total forehead length. If injected below the line of convergence (below 60 percent), the eyebrow elevation segment of the frontalis muscle is affected, resulting in potential eyebrow ptosis. If a levator palpebrae superioris aponeurosis weakness is present, the position of the upper eyelid can be supported by the orbicularis oculi muscle and by the frontalis muscle. The orbicularis oculi muscle is anchored to the upper margin of the eyebrow where it inserts into the dermis and fuses with the frontalis muscle. The frontalis muscle is capable of elevating the eyebrow and thus cranially shifting the overall position of the orbicularis oculi muscle and helping in opening the orbital aperture by elevating indirectly the upper eyelid. Reducing the tension of the frontalis muscle or weakening the eyebrow elevation segment of the frontalis muscle will result in a decrease in height of the eyebrow, which, consequently, reduces the ability to elevate the upper eyelid.

Injection Location 6 (Purple)

Targeted muscle: Lateral frontalis muscle at the fusion with the lateral component of the orbicularis oculi muscle, when injected subdermally.

Resultant effect: Depression of the tail of the eyebrow and reduction of the frequently observed wrinkle immediate superior to the lateral third of the hairy eyebrow.

Cause of effect: The lateral frontalis muscle is weakened, resulting in a weakening of the elevators of the lateral vertical axis; this results in dominance of the depressors of the lateral vertical axis, effected by the lateral vertical orbicularis oculi muscle. This results in a depression of the tail of the eyebrow that can be used to diminish the clinical presentation of an overly peaked Spock-shaped or Mephisto-shaped eyebrow. Due to relaxation of the lateral frontalis muscle, a clinical improvement of the wrinkle immediate superior to the lateral third of the hairy eyebrow should be expected.

DISCUSSION

Eyebrow shape and position are determined largely by the balance between the activity of periorbital muscles, as the eyebrow is not directly connected to underlying bone. Periorbital muscle contractions are exerted in three different movement axes: horizontal, medial vertical, and lateral vertical. Understanding these movement axes and utilizing them during neuromodulator treatments is crucial if one is to achieve reproducible, aesthetically pleasing outcomes and minimize adverse events. Although adverse events are not frequently observed[31–33] and their duration is limited,[34,35] their occurrence can be disturbing for the patient. It is also important to consider that treatment of the periorbital region for aesthetic purposes can alter facial expression and influence the patient's emotional behavior and perception through the mechanism of embodiment of emotions.[36,38] The authors believe that adaptation of neuromodulator injection techniques to ensure authentic nonverbal communication and genuine expressions is of paramount importance. [**See Figure, Supplemental Digital Content 1,** which shows baseline images of a female patient before neuromodulator injection upon glabellar frowning. The *red* and *green dots* indicate the neuromodulator injection locations of the performed three-point versus the performed five-point injection technique. The two techniques were performed at an interval of 10 months between each other with the three-point technique being performed first. The *red dots* represent injections performed in contact with the bone (no contour of the *red dots*), and the *green dots* (*green dots* with contour) represent injections performed subdermally, respectively, for each injection technique. A total of 17 international units of abobotulinumtoxinA (Dysport; Galderma, Uppsala, Sweden) (500-international unit vial dissolved in 3.2 cc of saline) were administered with each injection technique, ***http://links.lww.com/PRS/E950***. **See Figure, Supplemental Digital Content 2,** which shows glabellar frowning of the treated female patient assessed 14 days after the administration of 17 international units of abobotulinumtoxinA (Dysport) (500-international unit vial dissolved in 3.2 cc of saline) with the three-point versus the five-point injection technique, ***http://links.lww.com/PRS/E951***. **See Figure, Supplemental Digital Content 3,** which shows eyebrow elevation by means of maximal frontalis muscle contraction reveals a different outcome between the injection techniques. The medial eyebrow ptosis and the (compensatory) lateral hyper elevation after the five-point injection technique can be most probably related to the weakening of the central pillar of the frontalis muscle. This results in a limited ability to elevate the medial eyebrow but in an increased ability to elevate the lateral eyebrow upon maximal frontalis muscle contraction. This is not observed for the three-point injection technique, as here no frontalis muscle was targeted. The measurements (in centimeters) represent the distance between the medial/lateral canthus and the inferior aspect of the eyebrow in a perpendicular line. Measurements were taken at rest (*Re*) and during eyebrow elevation (*El*), ***http://links.lww.com/PRS/E952***.]

CONCLUSIONS

By understanding the functional anatomy of the periorbital muscles and combining this with individualized assessment and treatment planning, it is possible to achieve aesthetically pleasing, predictable, and reproducible treatment outcomes. In the interest of optimizing results, it is best to avoid the traditional rigid or fixed approach to this complex area.

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