Facial Assessment and Injection Guide for Botulinum Toxin and Injectable Hyaluronic Acid Fillers: Focus on the Upper Face

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Summary: Techniques for the administration of injectable fillers and neuromodulators for facial aesthetic rejuvenation and enhancement continue to evolve. As the number of physicians with limited experience in providing aesthetic treatments expands, the need for guidance and training from more experienced injectors has become apparent. The use of a slow, careful, and methodical injection technique is imperative in all treatment settings and for all facial areas. Constant attention to local anatomy, particularly arteries, veins, and nerve bundles, is critical for minimizing complications. This first article of a three-part series addresses techniques and recommendations for aesthetic treatment of the upper face. Traditionally, the upper face has been considered a basic area for treatment with neuromodulators but an advanced area for treatment with fillers. Injectable fillers may be used for temple volumization, eyebrow shaping, and forehead contouring. Neuromodulators are well suited for diminishing the appearance of dynamic facial lines such as forehead, glabellar, and crow’s feet lines, and eyebrow lifting and eye-aperture widening. These techniques may be used independently or together, sequentially or concurrently, to address rejuvenation of individual or multiple facial regions. Overall, this series provides a practical framework of techniques for physicians who desire to perform safe and effective aesthetic treatments using a multimodal approach. (Plast. Reconstr. Surg. 140: 265e, 2017.)

Currently, the use of injectable neuromodulators is the leading facial aesthetic procedure, and use of injectable fillers is the second leading procedure.1,2 Year after year, increases in the number of these procedures attest to their popularity. The techniques for administering neuromodulators and injectable fillers are constantly evolving—what was originally considered state of the art 5 to 10 years ago no longer represents the standard approach. This underscores the need for a more updated consensus, particularly in light of the increase in available products and delivery devices. The aim of this series of articles is to present the practices and techniques that the authors, as physicians with extensive experience, agree are important principles for the delivery of injectable fillers and neuromodulators to provide optimal aesthetic outcomes. In many aspects, the authors have reached agreement on techniques and recommendations; however, in some cases, reaching consensus has proven difficult and is confounded by the fact that not all products and devices (i.e., cannulas versus needles) are available in each country. Furthermore, the authors acknowledge that the use of minimally invasive techniques for aesthetic enhancement is not an exact science. Other experienced practitioners may have developed treatment principles and practices that achieve equally optimal outcomes. This series of articles is not meant as a comprehensive review

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of the literature and scientific evidence supporting the use of fillers and neurotoxins for facial rejuvenation. The following is meant as a guide to less-experienced practitioners as a starting point in expanding their experience with these techniques.

With the improvements in injection techniques and the introduction of new products, additional facial areas are now amenable to nonsurgical intervention. Although we illustrate where and how these products should be injected, these guides do not replace greater understanding of the different product characteristics of each of the available products and proper hands-on training. The majority of the recommended injection techniques are directed toward the novice injector who has little experience with the targeted treatment area. However, some of the treatment areas are considered advanced and require significant injection expertise. Therefore, we emphasize the importance of obtaining specific hands-on training. The recommended techniques are applicable to the majority of patients, but alternative techniques may benefit some patients to achieve optimal results. For teaching purposes, the recommendations involve learning injection techniques using the needle provided in the product packaging. However, changing the needle to one with a different size or to a cannula may be more appropriate, depending on the injector’s experience or when used in challenging areas of the face or areas in which extreme caution is necessary. The techniques and volume/dose ranges recommended are appropriate for most patients; however, the range of volumes/doses should be individualized depending on severity, age, and ethnicity.

This consensus will focus on the Juvederm (Allergan plc, Dublin, Ireland) family of hyaluronic acid filler products that use Vycross or Hylacross technologies (Allergan) and on onabotulinumtoxinA for neuromodulator injections (Botox; Allergan). Table 1 illustrates the recommended needles by product. The recommended volumes of hyaluronic acid filler and the recommended doses of onabotulinumtoxinA are specific to the products discussed and are not interchangeable with other hyaluronic acid fillers or botulinum toxin products. Moreover, the volumes and doses cannot be compared or converted to those of any other products by using volume or dose ratios. Table 2 illustrates the dose range for each Allergan plc portfolio product for specific injection areas. When a patient is to be treated with both a neuromodulator and an injectable filler, yet at separate sessions, the neuromodulator is more commonly used in the first session to address the dynamic component of the wrinkle, and the injectable filler should be used in the second session. However, if both products are used in the same session, the authors more commonly suggest that the filler should be injected first and then properly massaged, and only then should the neuromodulator be injected.

### MINIMIZING COMPLICATIONS WITH INJECTABLES

Common early and self-limited complications that may occur include erythema, edema, pain, and bruising. Lumps and bumps or bluish-gray discoloration under the skin caused by the Tyndall effect may occur with injection of fillers when injected too superficially. Allergic reactions (very rare with hyaluronic acid fillers) typically occur within several hours and can be avoided, in most cases, by careful pretreatment interview of patients. Late complications such as chronic inflammation, infection, granuloma, and hypertrophic scars are also rare. Treatment should be guided by the particular circumstances of each case and best practices of appropriate medical management.

Avoiding complications is the highest priority and must begin with a thorough understanding of the target regional anatomy followed by careful, precise injection technique. Continuous review of the relevant anatomy is essential so that one is aware of the cautions and hazards presented by the arteries, veins, and nerve bundles in the treatment area. The use of a slow, smooth, and careful injection technique is imperative in all treatment settings. Aspiration, although not a guarantee of extravascular location, is advisable in many situations to ensure proper placement of the needle/cannula whenever the needle penetrates beneath the skin. The use of an optimal injection volume is critical for obtaining the desired treatment effect. More is not always better, because overvolumization can lead to undesirable aesthetics and/or complications.

Several general precautions should be taken to minimize the risk of local complications. Makeup

<table>
<thead>
<tr>
<th>Table 1. Recommended Needle Sizes for Delivery of Injectable Fillers and OnabotulinumtoxinA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
</tr>
<tr>
<td>Injectable fillers</td>
</tr>
<tr>
<td>Ultra</td>
</tr>
<tr>
<td>Ultra Plus</td>
</tr>
<tr>
<td>Volbella</td>
</tr>
<tr>
<td>Volift</td>
</tr>
<tr>
<td>Voluma</td>
</tr>
<tr>
<td>OnabotulinumtoxinA</td>
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</tbody>
</table>
and other contaminants on the face should be removed before the injection,\(^5\) and patients should be instructed to avoid use of makeup for at least 12 hours after the procedure. Aseptic technique should always be used, which includes thoroughly washing hands and wearing gloves, and preparing the skin site for injection with chlorhexidine, povidone-iodine, or alcohol.\(^5\) The skin should be visibly assessed for local dermatologic disorders (e.g., active acne), active bacterial or viral infections, or inflammatory disease processes (e.g., cutaneous lupus erythematosus); treatment through irritated or inflamed skin should be avoided.\(^6\) The injection needle should be changed regularly to minimize the risk of infection and increased discomfort caused by the use of a blunt needle. Although smaller gauge needles may carry a risk of penetrating smaller vessels inaccessible to larger bore needles, the slower injection speed with smaller needles is essential for avoidance of product spread when the needle is inadvertently placed intravascularly. Smaller needles also tend to cause fewer infections and local adverse events. In treatment areas with challenging anatomy or a higher risk of complications, it may be advisable to use blunt cannulas instead of needles. Blunt cannulas may help avoid inadvertent intravascular injection.\(^7\) If vascular compromise or compression caused by hyaluronic acid fillers occurs, it will typically be evident by blanching and can be treated with injection of hyaluronidase into the area; aggressive massage and warm compresses may also be helpful.\(^3,4\) Again, it is important to emphasize that the anatomy of the treatment area and depth of the underlying vital structures should be constantly reviewed.

### UPPER FACIAL AESTHETICS

In the female patient, the ideal forehead should have a gentle convex curve 12 to 14 degrees off of vertical, and the glabellar region should exhibit a smooth contour; both should have few facial lines, if any, and even skin tone and texture.\(^8\) The temple should be flat or slightly convex, without any significant concavity, depression, or hollowing.\(^9\) The aesthetically desirable female eyebrow should be over the supraorbital margin. The middle aspect (the “head”) should be slightly lower than the lateral aspect (the “tail”). In the central aspect, the brow must peak in a vertical line along the lateral limbus of the iris. The male eyebrow lies at the supraorbital margin and is lower and flatter than in the female patient. The lateral end of the eyebrow should be equal to or slightly higher than the medial end, with an even volume distribution along the entire length of the eyebrow obscuring sharp bony edges. The upper eyelid should have fullness that follows the natural arc of the upper lid margin, and there should be no hooding.\(^10\)

### UPPER FACIAL ASSESSMENT

The upper face should be assessed for volume loss in the temples and forehead, position of the eyebrow, and the presence of excess skin in the upper and lower eyelids. In addition, the presence of static lines at rest and dynamic lines during animation should be evaluated in the forehead, lateral canthus, temples, and eyebrows.\(^3,11\)

### UPPER FACIAL ANATOMY

Key vascular anatomical structures in the upper facial region and their anastomoses and

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**Table 2. Recommended Allergan plc Portfolio Product and Volume/Dose for Individual Areas**

<table>
<thead>
<tr>
<th>Region</th>
<th>Product</th>
<th>Volume/Dose Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyaluronic acid fillers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temple volumization</td>
<td>Voluma</td>
<td>0.5–1.0 ml per side</td>
</tr>
<tr>
<td>Eye brow shaping</td>
<td>Ultra Plus</td>
<td>0.1 ml per site</td>
</tr>
<tr>
<td>Forehead contouring</td>
<td>Volift</td>
<td>≤0.1 ml per site</td>
</tr>
<tr>
<td>Neurotoxin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forehead lines</td>
<td>OnabotulinumtoxinA</td>
<td>1.0–2.0 U per site at 5 primary sites; 0.5–1.0 U per site at 2 optional sites; average dose, 10.0 U (total dose, &lt;20.0 U)</td>
</tr>
<tr>
<td>Glabellar lines</td>
<td>OnabotulinumtoxinA</td>
<td>4.0 U per site at 5 sites; total dose, 20.0 U</td>
</tr>
<tr>
<td>Crow’s feet lines</td>
<td>OnabotulinumtoxinA</td>
<td>4.0 U per site at 3 sites; total dose, 24.0 U (12.0 U per site)</td>
</tr>
<tr>
<td>Eyebrow lifting</td>
<td>OnabotulinumtoxinA</td>
<td>Glabellar sites as above; lateral aspects of the orbicularis oculi per side; 2.0–3.0 U per site at 3–4 sites; total dose, 12.0 U per side; overall total dose, 44.0 U; optional frontalis 2 lateral sites, 1.0–2.0 U per side</td>
</tr>
<tr>
<td>Eye-aperture widening</td>
<td>OnabotulinumtoxinA</td>
<td>1.0–2.0 U per side; total dose, 2.0–4.0 U</td>
</tr>
</tbody>
</table>

Please note the differing occurrences of the terms “side” and “site” in the Volume/Dose Range column.
interconnections must be understood and include the supraorbital and supratrochlear arteries, which are the terminal branches of the ophthalmic artery originating from the internal carotid artery, and the superficial temporal artery, which is the terminal branch of the external carotid artery. Key nerves in this region include the supratrochlear nerve, which runs with the corrugator muscle and under the frontalis fascia to innervate the medial and central forehead, and the supraorbital nerve, which exits from the superrior orbital foramen or notch and runs under the frontalis fascia to innervate the anterolateral forehead and scalp.

HYALURONIC ACID FILLER INJECTION TECHNIQUE FOR CONTOUR RESTORATION IN THE UPPER FACE

Temple Volumization

Age-related volume loss in the upper face can result in hollowing of the temples. Youthful temples are flat or slightly convex; temple volumization is indicated for temples that have become overly concave. Volumization of the temples can be achieved using Voluma, Volift, or Ultra Plus (Fig. 1). For temple volumization with Voluma, identify the temporal artery and vein (Fig. 1, above). Look for the junction of the temporal crest or fusion line with the orbital rim, and identify the area of greatest volume loss. Position the needle 1 cm superior to the lateral orbital rim and 1 cm lateral to the temporal crest. Insert the needle perpendicular down to bone, aspirate, and then inject very slowly using a supraperiosteal bolus injection (Fig. 1, below). Moderate pressure with the index finger of the free hand placed superior to the needle along the hairline will prevent economic loss by spread of product under the hair. Injection speed is slow, maintaining the needle on bone throughout the injection. Once the needle is removed, pressure on the injection site for several minutes is warranted in the event that a deeper vein is pierced, to avoid a late-occurring bruise. Gentle molding of the temporal region may be required after injection of...
typical volumes in the 0.5- to 1.0-ml range for most temporal hollows. Severe volume loss may require up to 2 ml per side of Voluma and multiple treatment sessions may be needed. When using Ultra Plus, some injectors prefer to deploy injections at two sites (Fig. 1, above). The first injection is made as described for Voluma. The second injection should be made along the lateral edge of the frontozygomatic arch, medial to the first injection. Gently pinch the skin at the tail of the eyebrow, and insert the needle at an anteromedial angle (Fig. 1, below). Aspirate and then slowly perform a deep injection using retrograde linear threading. Apply finger pressure to avoid displacement of the product into the upper eyelid and massage to shape the gel. Voluma is preferred for moderate to severe volume deficiency in the temple. Ultra Plus may be indicated for mild to moderate volume deficiency, or when Voluma is not available.

There are several areas of caution for temple volumization (Fig. 1, above). By visual inspection and palpation, avoid the superficial temporal artery and vein that lie in the subcutaneous tissue. Selecting a supraperiosteal location high in the temporal fossa (1 cm up the temporal fusion line and 1 cm lateral and parallel to the supraorbital rim) minimizes the risk of intravascular events because of the relative avascularity of this region and the thin fibers of the temporalis muscle of the upper region. Piercing of a branch of the artery or vein should result in deposition of product deeper beneath the deep temporal fascia lying on the muscle, which will protect the vessels. Again, once the tamponade effect of the needle is lost with its withdrawal, pressure on the area will prevent untoward bruising. The deep temporal arteries (anterior and posterior) and the middle temporal artery are located more posteriorly to this point, and their calibers are small, as they diminish in size from their origin at the second portion of the internal maxillary artery. Although not a guarantee of extravascular location, aspiration before injection is always warranted. Finally, avoid deep needle injections into the lower or posterior fossa above the zygomatic arch, as internal maxillary branches are present, with a risk of palate necrosis. Superficial cannula injection may be attempted with careful observation of cannula position. It should be noted that the deep periosteal injection high in the fossa may lead to temporary (24 to 48 hours) visible congestion of the temporal venous plexus lying in the subcutaneous tissue, whereas superficial injections may lead to surface irregularities that require massage over the ensuing days.

**Eyebrow Shaping**

The position and/or shape of the eyebrow may change with aging. Fillers can enhance eyebrow contour and volume, and may be used for improving the elevation of the eyebrow tail in cases where onabotulinumtoxinA provides insufficient eyebrow lifting. Eyebrow shaping can be achieved using either Ultra Plus or Volift. With each product, injections are made at two sites (Fig. 2, above). Identify the orbital rim to avoid inadvertent injection into the orbital cavity (Fig. 2, above). For the first injection, position the needle and aspirate before injection. Insert the needle at the lateral end of the eyebrow, inject very slowly using a supraperiosteal bolus injection, and then massage upward to shape. Injections in the lateral aspect of the eyebrows are intended to promote support of the roof. Remember to palpate the orbital rim and protect with a finger to avoid migration of the filler into the upper eyelid (Fig. 2, below). Avoid overcorrection of the eyebrow with filler, because it can result in an unduly prominent eyebrow appearance or cause eyelid edema. The second injection should be made in the same manner medial to the first injection along the eyebrow. Be careful to avoid the supraorbital foramen when injecting lateral to it (Fig. 2, above).

**Forehead Contouring**

Dynamic forehead lines are usually treated with a neuromodulator, but hyaluronic acid fillers are used to treat deep horizontal wrinkles to create a smooth contour across the forehead. Forehead contouring can be achieved using Volift or Volbella; if these are not available, Ultra can be used. Each product is injected at six sites along the forehead wrinkle (Fig. 3, left). For the first injection, position the needle near the lateral end of the wrinkle and at least 2 cm above the eyebrow, and aspirate before injection. Insert the needle fully, inject very slowly using a supraperiosteal bolus injection, and inject deeply to avoid the forehead and temporal vessels and nerves (Fig. 3, left). The needle tip must be on bone beneath the galea to access this avascular plane. Moving medially along the forehead, the second and third injections are given on the same facial side at least 2 cm above the eyebrow, with aspiration before each injection. Again, inject very slowly using a supraperiosteal bolus injection, and inject deeply to avoid the supraorbital and supratrochlear vessel bundles (Fig. 3, left). Continuing to the other side of the face, perform the other three injections in the same manner. Avoid scratching the periosteum.
Fig. 2. Eyebrow shaping using either Ultra Plus or Volift. Each filler is delivered by means of injections at two sites (above, left). Identify the orbital rim to avoid inadvertent injection into the orbital cavity (above, right). Aspiration is mandatory before each injection, and a finger should be placed to avoid migration of the filler into the upper eyelid (below).

Fig. 3. Forehead contouring using either Ultra, Volbella, or Volift. Each filler is delivered by means of injections at six sites (three on each side of face) (left). Injections are made at least 2 cm above the eyebrow, and areas of caution are particularly relevant for the second, third, fourth, and fifth injections. Aspiration is mandatory before each injection. For the first and sixth injections, inject deeply to avoid the forehead and temporal vessels and nerves, and for the second, third, fourth, and fifth injections, inject deeply to avoid the supraorbital and supratrochlear vessel bundles (right).
to reduce pain and swelling. Remember that massage is mandatory for delivering a uniform and smooth forehead contour.

There are several areas of caution for forehead contouring. Inject at least 2 cm above the eyebrow, and avoid not only the supratrochlear and supraorbital but also the superficial temporal vessels of the transverse frontal branch. In addition, always maintain deep injection to avoid the subcutaneous vessel bundles. It is also possible to use blunt cannulas to deliver these products for forehead contouring.

**NEUROMODULATOR INJECTION TECHNIQUE FOR INDICATIONS IN THE UPPER FACE**

**Forehead Lines**

The frontalis muscle elevates the eyebrow (e.g., during expressions of surprise and fright) and is the only elevator muscle in the upper face. Contraction of the frontalis muscle leads to the development of horizontal forehead lines. Injections of onabotulinumtoxinA for treatment of horizontal forehead lines are performed at five sites (Fig. 4, left). Treatment at two additional sites is optional. The dosing and injection pattern reflects the aesthetic objective of treatment, degree of muscle activity, and prior treatment in the area. Injections of onabotulinumtoxinA are made in the frontalis muscle. Gently pinch the skin above the frontalis muscle until a papule is seen and then insert the needle angled upward to one-third its depth (Fig. 4, right). Check eyebrow height, frontalis strength, and skin elasticity before injection, and also check for asymmetry. Careful selection of patients for treatment with fillers (i.e., more severe dynamic and static lines at rest, as described above) or neuromodulators is essential to achieve optimal outcomes and avoid potential complications. Overinjection in the forehead should be avoided, especially in female patients who present with low and flat eyebrows. In addition, overinjection of onabotulinumtoxinA may lead to a frozen appearance of the forehead, brow asymmetry, or medial and/or lateral eyebrow ptosis. In addition, extend the injection sites far enough laterally to avoid excessive elevation of the lateral part of the eyebrow, termed the “Mephisto” or “Spock” appearance. To avoid eyebrow ptosis, it is important to also treat the depressors of the glabellar complex and the lateral periorbital lines.

**Glabellar Lines**

Glabellar or frown lines may develop because of natural aging and photoaging of the skin in conjunction with ongoing contraction of the procerus and corrugator muscles. Contraction of the
procerus muscle lowers the medial aspect of the eyebrow and is the main contributor to the horizontal lines, whereas contraction of the corrugator muscle draws down the medial aspect of the eyebrow and is primarily responsible for vertical lines. Once considered an independent indication, treatment of glabellar lines is now viewed as an integral part of harmonization of the brow shape and eyebrow position. OnabotulinumtoxinA treatment is indicated for temporary improvement in the appearance of glabellar lines both during active contraction and at rest. Injections of onabotulinumtoxinA for treatment of glabellar lines involve five injection sites. Injections are made into the procerus muscle (one site) and the medial and lateral corrugator muscles (two sites per side) (Fig. 5, left). For injections into the procerus muscle, pinch the skin to help guide the injection and insert the needle to half its depth while angled upward (Fig. 5, above, right). Injection into the medial corrugator muscle is made (bilaterally) by gently pinching the skin and inserting the needle to full depth while angled laterally upward (Fig. 5, below, right). Injection into the lateral corrugator muscle (because of its more superficial location compared to the medial corrugator muscle) can be facilitated by pinching the skin and inserting the needle to one-third of its depth while angled laterally upward. Treatment of glabellar lines with onabotulinumtoxinA may cause ptosis of the eyelid and eyebrow if an incorrect angle or depth of injection is used.

Crow’s Feet Lines

Repeated contraction of numerous facial muscles involved in smiling and squinting, notably the orbicularis oculi muscles, leads to formation
of lateral canthal lines, also known as crow's feet lines. These lines radiate from the lateral canthus and initially appear on smiling but may become static because of aging, photodamage, and skin remodeling. The orbital part of the orbicularis oculi muscle causes protrusion of the eyebrows and voluntary eyelid closure; it is also responsible for crow's feet lines. In addition to its indication for temporary improvement in glabellar lines, onabotulinumtoxinA has been more recently approved for temporary improvement of crow's feet lines associated with orbicularis oculi activity. Successful treatment of crow's feet lines in most situations can be accomplished by injections at three sites per side. Two patterns of injection are recommended: pattern 1 is more appropriate for patients with low eyebrows (Fig. 6, above, left), whereas pattern 2 is more appropriate for those with high eyebrows (Fig. 6, above, right). Insert the needle to one-third its depth and inject onabotulinumtoxinA superficially into the lateral fibers of the orbicularis oculi muscle (Fig. 6, below) or at times more superficially in the subdermal space. Keep the patient's eyes closed. Use a finger to protect the upper eyelid, and avoid inadvertent injection into the upper eyelid. Helpful tips to facilitate optimum technique include directing the needle away from the eye (laterally) whenever possible and also avoiding the superficial blood vessels in the area. This area is prone to bruising because of its high vascularity. Depending on the patient’s ethnicity and the severity of the crow's feet lines, the total

Fig. 6. Treatment of crow's feet lines with onabotulinumtoxinA. Injections are made at three sites per side using pattern 1 for patients with low eyebrows (above, left) or pattern 2 for patients with high eyebrows (above, right). For each injection, insert the upper one-third of the needle, as indicated by asterisks (below, left). Protect the upper eyelid with a finger, and avoid directing the needle toward the eye (below, right).
dose of onabotulinumtoxinA may vary. It should be kept in mind that treatment will not eliminate all crow’s feet lines in many patients. Dynamic lines related to muscle contraction respond well to neuromodulators. However, static lines caused by photodamage and loss of underlying fat and structural support become more prominent with age and are less responsive to treatment.17

**Eyebrow Lifting**

Because the orbital portion of the orbicularis oculi protrudes and depresses the eyebrows and allows for voluntary eyelid closure, the presence of crow’s feet lines leads to lowering of the lateral aspect of the eyebrow. OnabotulinumtoxinA may be used for eyebrow lifting by treating both glabellar and crow’s feet lines. Injections of onabotulinumtoxinA are made at five glabellar sites as described above. Treatment of the lateral aspect of the orbicularis oculi is made at three to four sites on each side of the face (Fig. 7, left). Although techniques to produce maximal lifting effect in the eyebrow may vary, one should block the eyebrow depressors (corrugator, procerus, and orbicularis oculi muscles). Two upper lateral sites (one on each side) in the frontalis muscle may be injected to prevent development of the Mephisto or Spock eyebrow. Depending on the patient’s ethnicity and severity of eyebrow lowering, the total dose of onabotulinumtoxinA may vary. The techniques for injecting the glabellar and crow’s feet sites are described in the preceding sections (Fig. 7, right).

**Eye-Aperture Widening**

The palpebral part of the orbicularis muscle closes the eyelid during blinking and is subdivided into preseptal and pretarsal portions.18 The preseptal fibers run anterior to the orbital septum; with

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*[Fig. 7. Eyebrow lifting with onabotulinumtoxinA. Injections are made at five glabellar sites and eight crow's feet line sites (four on each side) (left). Observe that the different symbols used here indicate different depth of injection as follows: squares indicate full-needle depth; X indicates one-half needle depth; and asterisks indicate one-third needle depth. The technique for injecting the glabellar sites is shown in Figure 5; the technique for injecting two optional sites in the forehead is shown in Figure 4; and the technique for injecting the orbicularis oculi is shown in Figure 6. Use fingers to protect eyes (right).]*
aging, they are responsible for lower eyelid lines and narrowing of the palpebral aperture.10 Widening of the eye aperture with onabotulinumtoxinA is performed at one site on each side inferior to the lower eyelid and lateral to the midpupil line (Fig. 8, left). Besides promoting widening of the eye aperture with these injections, the use of pretarsal injections may also reduce the horizontal rhytides (fine lines). Perform the snap test before injection to verify lower lid functional recovery. Do not treat this area with onabotulinumtoxinA in patients with scleral show, eye bags, or a poor snap test. Insert only the bevel of the needle for a very superficial injection. Keep the needle parallel to the skin and observe for papule formation (Fig. 8, right). Keep the patient’s eyes closed, and use fingers to protect the eye.

CONCLUSIONS

Botulinum toxins continue to be the most important tools for upper face rejuvenation. The use of hyaluronic acid fillers is helpful to provide correction of volume loss and provide structural support. The upper face is considered a basic area for use of botulinum toxin but a challenging area for use of fillers, particularly because serious complications such as blindness and necrosis may occur. For the experienced injector, a combination of using both botulinum toxin and a hyaluronic acid filler may provide benefit in a number of aspects of facial rejuvenation, including more natural appearance, longer duration of effect, injection of lower volumes of filler, and reduced cost.9,12,18,19 Usually, the dynamic component of the wrinkle is treated in the first session with botulinum toxin, and then the filler is used in the second session. In cases where both products are to be used in the same treatment session, the filler should be injected first with proper massage, and only then should the botulinum toxin be injected.

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PATIENT CONSENT

Patients provided written consent for the use of their images.

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REFERENCES


