The Road Less Injected

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The plethora of new injectable products has created new opportunities for physicians to treat areas previously thought to be unresponsive to soft-tissue augmentation. Use of these products has dramatically increased the demand for nonsurgical facial rejuvenation, and with this increase, there is a concomitant desire to treat areas not traditionally injected. These areas may be addressed with a high degree of patient satisfaction.

Recent increases in the numbers of patients receiving soft-tissue augmentation and the spate of new fillers being introduced have led to new areas of the body being injected. Most physicians injecting hyaluronic acids, collagens, poly-L-lactic acid, silicone, calcium hydroxylapatite, or botulinum toxin are experienced in treating nasolabial creases, marionette lines, and lips. Injectors with advanced skills are familiar with injecting the tear trough and zygomatic areas.[1] There are, however, areas that are amenable to injection with several of these materials that constitute the road less injected. Among the areas that are worth considering when expanding one's injection horizons are the earlobes, glabella, dorsal hands, and nasal bridge.

TREATMENT AREAS

Earlobes

One telltale sign of aging is earlobes that are lax and marked by rhytides. Options to treat the earlobes include surgical remodeling with excision of the inferior aspect, reshaping of the lobe, and laser resurfacing. However, several fillers currently available are viable options for this area. Among the materials that one should consider are the hyaluronic acids.

Juvéderm® and Restylane® are available hyaluronic acids that are suitable for injection into the earlobes. Perlane® is effective in treating the earlobes when significant volume is needed; the new drug application for this filler is currently with the US Food and Drug Administration. Earlobe injections are most commonly performed in conjunction with facial injections, such as in the nasolabial creases, and it is rare to have patients request these treatments in isolation (they are referred to as "adjunctive injections").

Patients who will benefit from earlobe injections are usually between 50 and 75 years of age. Patients younger than 50 years typically do not require earlobe injections, and those older than 75 years usually require surgical intervention. Often, patients are women who first complain of wrinkles where they wear their earrings (Figure 1).

Treatments should begin with a thorough preparation of the areas to be injected. Although the ears may harbor bacteria such as *Pseudomonas*, cleansing with alcohol is adequate for injections. Anesthetic is usually not required for injections of the ears since they are not as sensitive as the lips may be. For patients who want an anesthetic, application of ice for a few minutes prior to the procedure may be adequate. For patients who want more anesthetic than that afforded by ice, application of a compounded betacaine, lidocaine, or tetracaine preparation or of a proprietary topical anesthetic such as lidocaine 4% can be helpful. Finally, patients who require extensive injections or who are particularly sensitive may benefit from injections of lidocaine with 1:100 epinephrine, which can be injected in small amounts (eg, 0.1 mL into each lobe) as local anesthetic regionally or into the greater auricular nerve. This is done with a postauricular injection.

Injections of the earlobes need to address the same basic problems found elsewhere on the face: rhytides and loss of volume. Often, this area requires a layered approach, consisting of deeper injections for volume and superficial

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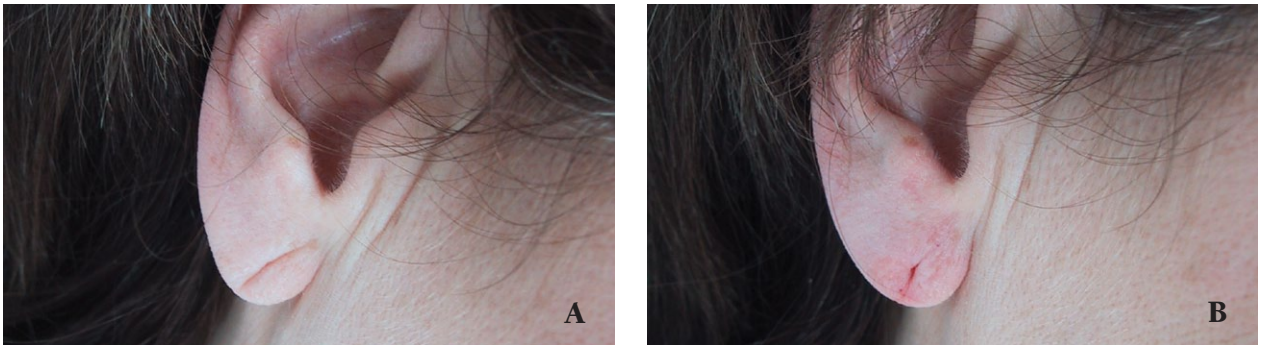

Figure 1. Prominent earlobe crease before (A) and after (B) treatment with Restylane®. The correction demonstrated is typical for this area.

injections for the finer rhytides. In order to replace the volume lost with aging, one needs to inject into the body of the lobe. This is best accomplished with a 1/2-in, 30-gauge needle inserted about 2 mm into the earlobe. The goal is to reinflate the earlobe's lost volume by injecting the subcutaneous space with filler (injections into the dermis are best reserved for etching out superficial rhytides rather than volume restoration). When using Restylane, each earlobe will require approximately 0.5 mL of material injected into the body of the lobe. After this is done, Restylane may be injected into the rhytides to fill the creases. Juvéderm 24 or 30 may be used in the same manner. Perlane has the same chemical composition and concentration as Restylane, but a larger particle size, containing 20,000 particles per milliliter instead of the 100,000 particles per milliliter found in Restylane. When injecting Perlane into the earlobes instead of Restylane, injectors may need less volume. One also needs to inject into the deep dermis or subcutaneous plane when using Perlane to treat earlobes. After treatment with any of these hyaluronic acids, one should gently massage the areas treated to decrease the lumps and bumps that may appear after injections.

Glabella

The glabella is the area most frequently injected with botulinum toxin, and for most of the patients injected, this treatment suffices.[2] Patients who have a significant static component of the rhytides will, however, require use of adjunctive materials, including fillers.[3] Although some physicians are fearful of injecting this area with fillers because the potential for necrosis is greater than in other areas, many have gradually begun to develop techniques for treatment of the glabella. Recent publications have elucidated some of the factors associated with necrosis in this area.[4] Factors implicated in negative outcomes following glabellar injections include large-volume and intravascular injections and injections containing high-density products.

When considering which substance to inject into the glabella, one needs to bear in mind that the filler having the most significant association with necrosis is Zyplast® (collagen) (thus, it stands to reason that CosmoPlast™ [collagen] will react in an identical manner). Other fillers, as well as medications such as triamcinolone, are also reported to cause necrosis. Among these products, there have been reports that Restylane causes glabellar necrosis.[5] Based on the experiences with Zyplast, Restylane, and triamcinolone, it would be logical to expect that Juvéderm, poly-L-lactic acid, and calcium hydroxylapatite can cause this complication as well.

Injections of the glabella need to be performed with low-volume, low-pressure techniques in order to minimize the risk of vascular compromise. To avoid necrosis, physicians must aspirate the needle to be certain that they are not injecting intravascularly. Two major vessels in the area merit special mention: the supratrochlear artery and the supratrochlear vein. Direct introduction of any material into these vessels can be harmful. Compressing these vessels should also be avoided.

Using a 30-gauge needle to inject either Restylane or Juvéderm 18 or 24 in the glabella, one should begin with tenting the rhytid or fold upwards with the thumb and forefinger. This not only raises the area away from vessels but also allows one to guide the product into the channel of the rhytid. The needle should be placed in the mid dermis in the same manner as when injecting other areas. Depending on the length and depth of the rhytid, sufficient filler should be introduced so that the surface is as close to even with the surrounding areas while avoiding volumes that compress underlying structures. A physician who is uncertain about injecting volume sufficient to correct a glabellar rhytid or undercorrecting in order to avoid a high-pressure injection should err on the side of undercorrecting and explain to the patient that additional material can be added later (it is better to have to add material than to have to add skin).

It is our belief (there are no clinical trials to support this assumption) that thicker materials have additional risks when injected into the glabella. This is based on past experience with collagens when cross-linked materials had a higher incidence of problems than

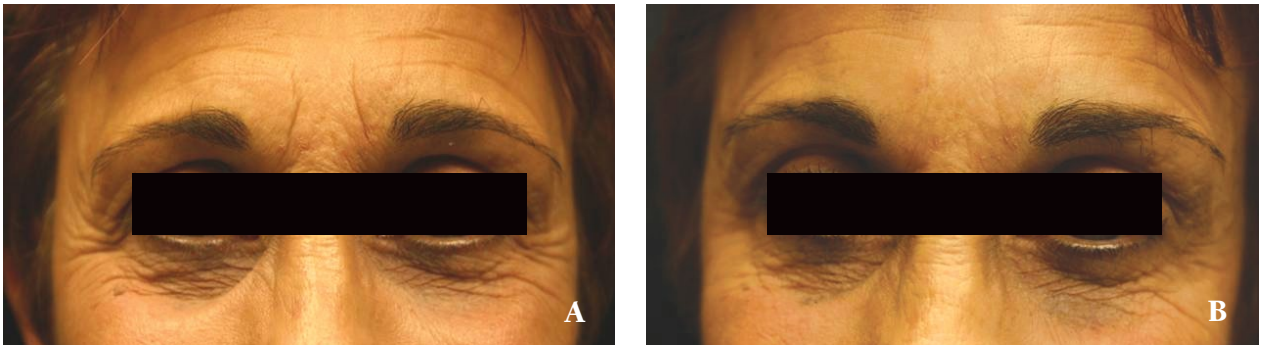

Figure 2. Glabellar rhytides before (A) and after (B) treatment with Restylane® and botulinum toxin type A. Rhytides with both dynamic and static components are best treated with combinations that address each of these issues.

did non–cross-linked products. Materials such as calcium hydroxylapatite may confer additional risks when injected into the glabella and should be injected with caution. When injecting the glabella with calcium hydroxylapatite, injectors should tent up the rhytid being treated. As with other materials, it is important to aspirate the needle prior to injections. Unlike other materials, very small volumes of calcium hydroxylapatite should be injected into the glabella, and this material should probably be reserved for physicians who have a great degree of filling experience.

Needle placement should be into the mid dermis (injections into the superficial dermis will increase the risk of nodule formation). The size of the needle used for calcium hydroxylapatite is typically 27 gauge or larger, but in this area it should not exceed 26 gauge in most instances. Average volumes of calcium hydroxylapatite placed in the glabella are less than 0.1 mL in most patients. As with other fillers used in this site, it is better to undercorrect and touch up later (Figure 2). During the injection, one should watch the skin in surrounding areas to make certain that no blanching or other signs of vascular compromise are occurring, and if there is any question, immediately stop the procedure and follow guidelines elaborated by Glaich et al.[4]

Another product that may be used in the glabella is silicone. As with its use in other areas, silicone should be injected using the microdroplet method, which requires multiple visits spaced about 1 month apart. Only medical-grade silicone should be used.

There is a paucity of information available regarding the use of poly-L-lactic acid in the glabella. Until more information is available, it seems prudent to avoid introducing poly-L-lactic acid into this area unless the physician has a great degree of experience with soft-tissue augmentation.

Hands

Until recently, hand rejuvenation to correct volume loss was limited by the high costs and short duration of products available. The introduction of newer products has made this site amenable to rejuvenation. Comprehensive hand rejuvenation must address both cardinal signs of aging: volume loss and photodamage of the epithelium. Treatment of this latter aspect may involve chemical peels, intense pulsed light, lasers, retinoids, microdermabrasion, or some combination thereof.

Hyaluronic acids that are relatively long lived, including Restylane, Juvéderm, and Perlane, can be used to replace lost volume in the dorsum of the hands. Poly-L-lactic acid is also able to replace volume in this site. An older but still valuable technique for replacement of volume in the hands uses autologous fat, and there are many outstanding references for this methodology.[6]

In most instances, anesthesia prior to injection consists of application of topical medications or ice. For patients who cannot tolerate injections into their hands, regional anesthesia may be required.

When injecting fillers such as the hyalurons, injectors must fill the areas between the extensor tendons to minimize the "stringy" appearance associated with aging hands. Needle placement needs to be in the immediate subdermis, and when inserting the needle, one must avoid injections into the vessels that tend to be prevalent in this site. Injecting beside vessels often gives the best results.

For the hyalurons, injections begin with the proximal aspect of the hand by injecting blebs of 0.1 to 0.25 mL of material, which can then be massaged into a homogeneous plane. The average amount of material injected into a 60-year-old hand is about 1 to 2 mL. Obviously, the less dense the hyaluron, the greater the amount of volume required to make the same degree of improvement.

Poly-L-lactic acid may also be used in this area to replace lost volume. Unlike the hyalurons, poly-L-lactic acid does not directly replace the volume but rather stimulates collagen production. The degree to which this occurs varies with each patient, and as a result, the amount of poly-L-lactic acid required and the number of injections are variable.

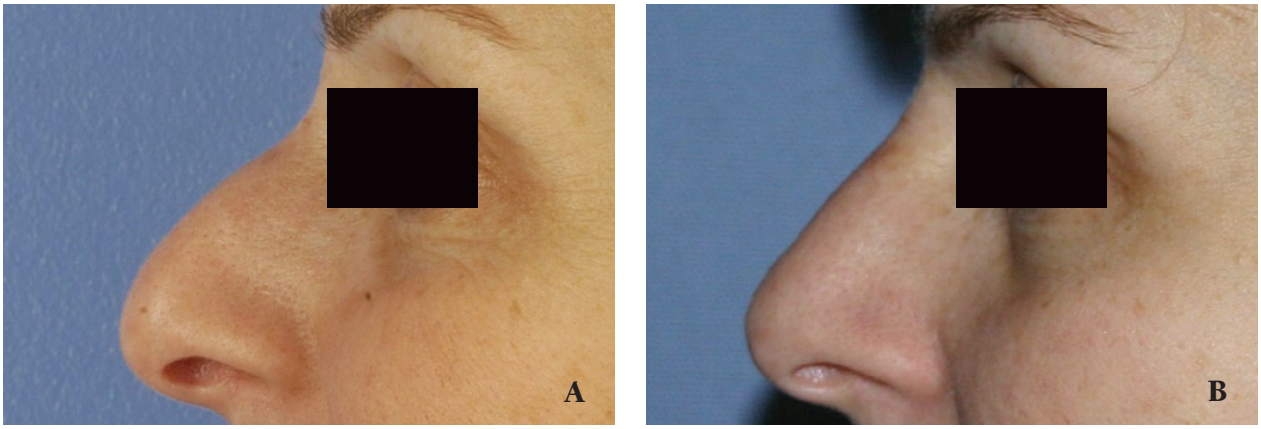

Figure 3. Patient before (A) and after (B) nonsurgical nasal remodeling using Restylane® and botulinum toxins. Reprinted with permission from *Cosmetic Dermatology.* 2006;19:745-748. ©2006, Quadrant HealthCom Inc.

Injections of poly-L-lactic acid typically use 25- or 26-gauge needles placed in the mid dermis. However, in patients whose hands are candidates for rejuvenation, the difference between mid dermis and superficial dermis (or tendon for that matter) is miniscule, and one needs to prepare the patient for the possibility of subcutaneous papules, which can appear in this site more frequently than in facial injections. For each bottle of poly-L-lactic acid, standard dilutions have been of 5 to 6 mL of liquid. When injecting hands, half of the bottle is injected into each hand at each session. However, recent clinical data presented by Vleggaar[7] suggest that reducing the poly-L-lactic acid concentration by diluting each bottle with 6 mL of water and 2 to 3 mL of lidocaine will decrease the incidence of papule formation. The number of injections required for rejuvenation varies, but 3 to 6 visits may be needed for noticeable changes to occur. If the patient is not undergoing a procedure to rejuvenate the epidermis, it is reasonable to prescribe a retinoid, which may improve the overall appearance of photodamaged skin and potentially stimulate collagen production and renovation.

Nose

For patients who desire to improve the aesthetic appearance of the nose but do not want surgical revision, injections with fillers offer an attractive alternative (Figure 3). These filler injections may be combined with injections of botulinum toxins into the nose for optimal improvements.[8]

The most common indication for filler injections into the nose would be to alter the profile of the nose. Materials used may include the hyalurons, collagens, and calcium hydroxylapatite. For most patients, anesthesia is not required in this area, and when it is, topical medications such as lidocaine 4% or benzocaine preparations are usually sufficient.

Hyalurons such as Restylane and Juvéderm may be injected into the deep dermis of the nose. As with other parts of the body, the distance between the dermis and periosteum or perichondrium is minimal, and proper placement may be difficult in some patients. A 30-gauge needle (0.5 in) should be used to introduce hyaluronic acids into the skin. Serial puncture techniques may be used, and amounts of materials from 0.05 to 0.1 mL may be injected with each puncture. Following injection, care must be taken to massage the material into a confluent and evenly dispersed plane. Depending on the size of the nose, volumes required for injection will vary, but average amounts of material used range from 0.25 to 1.0 mL.

Calcium hydroxylapatite may also be used to sculpt the nose, but it requires a different technique. This material has the capability to stimulate bone growth when injected into the periosteum, unlike the hyalurons. Therefore, care should be taken to avoid injection into this plane unless it is the goal of the injector to produce new bone growth.[9] Injections of calcium hydroxylapatite are performed with a 0.5-in, 26- or 27-gauge needle placed into the deep dermis. Placement into the superficial dermis will result in a series of small nodules on the nose, whereas placement into the periosteum may result in bone formation. Thus, injections of calcium hydroxylapatite into the nose are more fraught with potential complications than are injections with hyalurons.

Medical-grade silicone may be used for nasal recontouring or for scar correction on the nose. Injections of this material involve the microdroplet technique and serial injections each approximately 1 month apart. As with other silicone injections, medical-grade silicone should be used by injectors who have a great deal of experience with fillers in general and with silicone in particular.

CONCLUSION

As with any aspect of cosmetic dermatology, the advent of new materials stimulates new thinking about potential new applications. At the present time, new hyaluronic

acids, poly-L-lactic acid, and calcium hydroxylapatite are being injected into locations that were not amenable to injections with older products. New thinking about areas such as the nose, hands, earlobes, and glabella is increasing the range of opportunities for cosmetic dermatologists and their patients. When treating areas less commonly injected, one must have a great deal of experience injecting other locations and a thorough understanding of the materials and anatomy under consideration. Restylane, Juvéderm, poly-L-lactic acid, silicone, and calcium hydroxylapatite have expanded our repertoire of materials that may be injected; with this increase come new opportunities.

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