Panel Discussion

Soft Tissue Augmentation

Editor's note: My thanks to the moderator, Timothy A. Miller, MD (board-certified plastic surgeon and ASAPS member, Los Angeles, CA), and to panelists Arnold W. Klein, MD (board-certified dermatologist, Beverly Hills, CA); Val S. Lambros, MD (board-certified plastic surgeon and ASAPS member, Newport Beach, CA); and Seth Matarasso, MD (board-certified dermatologist, San Francisco, CA), for sharing their opinions and clinical experiences.

Dr. Miller: The first patient is a 40-year-old woman with pale, translucent skin. She is concerned about vertically oriented wrinkle lines in the glabellar area (Figure 1, A). Dr. Klein, how would you approach this patient?

Dr. Klein: If this patient chooses injectables alone and still wishes to have full functioning of the corrugators, my choice would be Zyderm 1 bovine collagen 35 mg per cc (McGhan Pharmaceuticals, Santa Barbara, CA). There is also Zyderm 2, which is administered at 65 mg per cc. To greatly reduce the chance of an adverse reaction, I would perform a skin test initially and again in a month, and then treat her at 6 weeks. I would begin injecting where the lines intersect with the brows and the upper part of the procerus. I would then flow collagen into these areas in a wide, yellowish mass, avoiding any irregularity. When one becomes adept at injecting it, Zyderm 1 produces the best cosmetic result. I frequently get overcorrection in that area when I use Zyderm 2.

Dr. Miller: Are there any technical considerations that you advise when injecting the Zyderm?

Dr. Klein: It is important to hold the surface that you are injecting taut. For Zyderm 1, I use a 32-gauge metal needle rather than the 30-gauge needle that comes with it.

The injection should create a yellowish color that can be seen beneath the skin. One should not see a residual whiteness upon completion. I inject in a continuous stream, keeping the material flowing from the advancing border after each injection.

Dr. Miller: Why do you use a 32-gauge rather than a 30-gauge needle?

Dr. Klein: The 32-gauge needle produces less trauma. I don’t get the bruising that can commonly be seen after implantation. To inject an entire face can take from 45 minutes to an hour.

Dr. Miller: What about Zyplast (McGhan Pharmaceuticals) in this area?

Dr. Klein: Zyplast, the third form of this product, was approved for use in 1985. Zyplast is cross-linked with the addition of 0.0075% glutaraldehyde, producing covalent bridges between 10% of the available lysine residues of the collagen molecule and making it more robust. The problem with injecting Zyplast into the glabellar area is its propensity to cause necrosis in that area if you embolize an arteriole. This reaction is reported in the glabellar area in approximately 9 out of 10,000 patients. Physicians with the most experience with collagen have advised against using Zyplast in the glabellar region.

Dr. Miller: Would you consider using botulinum toxin?

Dr. Klein: These lines respond well to botulinum toxin. It is important to note any asymmetric brow positioning and bring this to the attention of the patient before you begin. I would inject 3 units of Botox (Allergan Corporation, Irvine, CA) above the point where a line...
from the right inner canthus to the left brow intersect and a line from the left inner canthus to the right brow intersect. I then administer 6 units on each side above the brow in line with the inner canthus, directing the injection upward and laterally. Next, in line with the pupil but 1 cm above the brow—or above the orbit in an older patient with brow ptosis—I administer 3 units of Botox on each side, for a total of 21 units (See Figure 1, B for injection points for glabellar frown lines). If the patient is not satisfied with these results, or if she returns in the future and the lines are still visible, I would then use Botox, followed by collagen in the same session.

Dr. Matarasso: My approach to this woman is to begin treatment with approximately 30 units of Botox (2 mL nonpreserved normal saline per 100-unit vial at 0.1 cc per 5 units). With forceful contraction, the muscular components of the glabellar complex can be identified. A series of 5 or 6 injections—1 or 2 in the midline procerus muscle and 2 in the paired corrugator superciliii muscles—will effectively immobilize this area for 3 to 4 months. To avoid lid ptosis, it is important not to cross the mid-pupillary line and to remain approximately 1.0 cm above the brow. This patient already has an acceptable brow position. Therefore, to avoid further arching of the brow, it is important to avoid inactivating the mid-frontalis muscle fibers. Despite adequate muscle paralysis, this patient might not be completely satisfied, as her rhytids are deeply etched in and are not solely muscular in nature.

A regimen with topical exfoliatives and/or superficial resurfacing will reduce the photo damage. An optimal result would mandate that Zyderm 1 be injected. Upon complete muscle paralysis at 7 to 10 days post-Botox injection, 0.5 cc of Zyderm 1 can be delivered through a standard 30-gauge needle. This needle is not so malleable that it dulls and bends easily, yet it is capable of adequately administering a series of superficial injections into the superficial dermis.

Dr. Klein: I usually see quizzical brows as a result of treating the central frontalis rather than the glabella. The easy way to correct this problem is to feel the temporal fusion line and administer approximately 2 to 3 units of Botox 2 cm above the brow in that spot; this will bring down the quizzical brow.

Dr. Miller: Our second case is an extreme example of deep perioral wrinkles in a 65-year-old woman (Figure 2). Let’s start with Dr. Lambros.

Dr. Lambros: I have aggressively dermbraded these muscle-generated wrinkles, and with this pattern of wrinkling, I have had reasonable success, mainly in the upper lip. Dermabrasion appears to work better than lasers around the lips. I have had less success treating those lines radiating laterally and inferiorly away from the lip. When I try to inject collagen or Zyplast into such areas, I am usually disappointed. However, patients are sometimes happier than I am with the results.

Dr. Matarasso: These lines are in large part the result of hypertrophy of the orbicularis oris muscle. As such, in an attempt to conserve the volume of soft tissue augmentation, many have advocated the use of Botox, primarily in the upper lip. Four 1-unit injections along the vermilion have been helpful in reducing the depth of the rhytids, though at the risk of limiting the full excursion of the upper lip and thus imparting a heavy sensation. While I have found autologous fat transplantation to provide fullness to the lip (which will also consequently diminish the appearance of the radiating lines), it is unfortunately
too dense and thick a substance for the perioral rhytids.

Although not ideal, if this patient has adequate adnexal structures (facial hair) that would support re-epithelialization, I would actually recommend a second deep resurfacing either with an occluded phenol-based peel or carbon dioxide laser abrasion. The deep lines could adequately be effaced, and to minimize the sharp demarcation of a regional procedure, the remainder of the facial skin could be addressed with either an erbium laser or a medium-depth TCA peel.

Dr. Miller: Dr. Klein, what would you do if this patient came to you and said, “I just want the best you can do; I understand it’s not going to be perfect”? Dr. Klein: I would first augment the vermilion border of the upper and lower lip with Zyplast because this is where those lines emanate from. I would treat the remaining lines individually with Zyderm, flowing it up the lines and even into the lip itself. I would use approximately 2 cc of Zyplast and approximately 4 cc of Zyderm. Before beginning injection, I apply Emla cream anesthetic (Mediderm Inc., Skokie, IL) to the areas to be injected and occlude the Emla for 30 minutes. I use a no. 5 magnifier while injecting the collagen so that I can see more precisely.

Dr. Miller: The next patient is a 68-year-old woman who wants thicker and fuller lips (Figure 3). Dr. Lambros, what would you do to accomplish this?

Dr. Lambros: My greatest experience happens to be with fat, but I’m not overly impressed with the reliability of fat in the lips. Though I have used fat from many locations, I have found that fat from the knee works best when I use small 2.4-gauge Mercedes syringes. I would inject fat into the upper lip and 2 to 3 cc into the lower lip. At least 15 to 20 passes per cc are necessary, and I run them frequently into the whole volume of the upper lip. Patients tend to focus on the free border of the lip, but as people get older, the whole lip unit, from nasolabial fold to nasolabial fold, begins to thin out. This is one reason that nasolabial folds appear—because the central area thins. For this reason, I tend to fill the whole upper-lip area. There is also evidence of bony loss around the pyriform aperture, making the upper lip recede even more.

Dr. Matarasso: Although many physicians have had a great deal of success with autologous fat transfer for lip augmentation, reliability is not the only concern. Prolonged postoperative edema can also be exclusionary and untenable for patients. Similarly, many have found permanent augmentation with polytetrafluoroethylene products to be highly effective. I have not been able to

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—Val S. Lambros, MD
master uniform placement, avoiding a step-off at the points of insertion. My treatment of choice would be Zyplast, a thicker and more robust form of bovine collagen. This can be accomplished by injecting a steady stream in the potential space along the vermilion using a 30-gauge needle. I begin at the oral commissure for both the upper and lower lip.

An important nuance is to reverse the natural gravitational depression at the inferior oral commissure by bolstering this area in and around the lower lip. I would also accentuate the cupid’s bow with Zyplast to decrease the distance between the lip and the nasal base. At the patient’s discretion, Zyderm 1 can be injected into rhytids radiating from the lip. I inform patients that this treatment generally lasts 3 to 4 months but that there is a great deal of individual variability.

Dr. Klein: My most frequent single site of collagen application in the face is the lip. For the lower lip, I too inject from one corner to the other, using Zyplast and a 30-gauge needle, in the potential space. I would attempt to flow it rather than perform serial puncture injections. In principle, Zyplast should be placed deeper and injected with a larger gauge needle than Zyderm.

When I treat the upper lip, I start in the center and inject out to the corners, lengthening the upper lip in order to fill and lift the end of the lip without distorting the Cupid’s bow, as can happen when one injects straight across the lip.

Dr. Lambros: I also treat the upper lip in this way and think it’s an effective technique.

Dr. Miller: Dr. Klein, how long do you think this treatment will last?

Dr. Klein: I inject patients every 2 to 3 months for the first year, every 4 months after 1 year, and every 6 months after the second year.

Dr. Matarasso: Weighing all factors, including material availability and ease of administration, I think that bovine collagen is the gold standard for lip augmentation. However, with an ever-expanding list of options, it is clearly not ideal. There is a need for newer fillers that have greater longevity and avoid the potential for hypersensitivity or allergic reactions. Bovine collagen, with its safety record and predictability, is an appropriate way to introduce patients to soft tissue augmentation. Contingent on the patient’s degree of success with bovine, other agents, such as cadaver collagen, autologous fat transfer, and polytetrafluoroethylene, can be approached at a later date.

Dr. Miller: The next patient is a 53-year-old woman with some deeply recessed upper- and lower-eyelid sulcus (Figure 4). Dr. Lambros, how would you approach this?

Dr. Lambros: In a patient who has less hollowing than this, where the recess does not extend into the orbit, fat works very well. You can actually elevate the brow with it. I use centrifuged fat through an incision over...
the mid brow (or within the eyebrow hair itself) and a lateral brow incision; this approach helps me get to the medial lateral corners and the lateral brow so that I can reach the center part of the orbit. The infraorbital rim might be the best area for injecting fat, but it’s also the most dangerous. The younger the patient, the better, because thicker skin hides some of the small tubular elevations that you can see. For this reason, I inject a maximum of a half cc of fat in a lower lid. Every droplet of fat that you put in is going to be visible if it clumps up or is not right on the periosteum.

Dr. Matarasso: Alternatively, I might suggest inactivating the brow depressor muscles with Botox, causing an unopposed elevation of the frontalis muscle. This will cause eyebrow elevation and skin tenting, thereby slightly diminishing the deep ocular sulcus. The glabellar area is treated in the standard fashion, and an additional 2.5 units of Botox is placed at the lateral aspect of the eyebrow, corresponding to the lateral orbicularis oculi muscle, also a depressor. This muscular inactivation results in a subtle elevation of the brow—a chemical brow lift—that can be used alone or in conjunction with autologous fat transfer to potentially prolong the longevity of the transplanted fat.

Dr. Klein: I’ve seen patients in whom physicians had injected fat subperiosteally through the mouth. This technique appeared to be good at eliminating the depressed area under the eye, and the result lasted a reasonable amount of time. It is not something that I would ever try. I am much too minimally invasive in my techniques.

Dr. Miller: The next patient, a 40-year-old woman, has had a reaction to collagen (Figure 5). Dr. Klein, how would you avoid a problem like this?

Dr. Klein: I perform an initial test, retest in a month, and then treat at 6 weeks. Many physicians who are dual testers perform an initial test, retest at 2 weeks, and treat at 4 weeks. I think the longer wait between tests and subsequent treatment is very important. In the literature, reactions to collagen are reported in 1.3% to 6.2% of patients. Either the doctors did not bother to evaluate the skin tests or they just did not know how to read them. Redness or swelling that occurs after 6 hours is a positive test result, and the majority of skin test reactions (75%) occur within the first 72 hours, which reflects a previous sensitivity to bovine collagen, perhaps from dietary sources.

Dr. Matarasso: The most important part of the treatment for this patient is sustained emotional support, reassuring her that in time her condition will resolve and there will be no residual scarring. I would provide this woman with instructions on camouflage makeup. For medications, I would start with an over-the-counter nonsteroidal anti-inflammatory agent, such as Motrin at 500 mg, to be taken on a full stomach for 2 to 3 weeks.

Dr. Miller: What would you do if there was still no improvement?

Dr. Matarasso: I would try intramuscular steroids at a low concentration of roughly 2 mg per cc into the area that is indurated. To try to get temporary, quick-acting improvement and as a last resort, I would suggest using a systemic steroid, such as intramuscular Celestone.

It is important to recognize that injecting collagen is very time-consuming and extraordinarily technique-dependent.

—Arnold W. Klein, MD
Dr. Klein: Unfortunately, I have not found nonsteroidals to be very effective. Avoiding vitamin C and alcohol can be helpful. It is reported in the literature that 84% of the patients heal within 11 months’ time but that some swelling and redness may persist for up to 2 years. There may be a slight atrophic scar in that area when all swelling and redness has disappeared. I avoid systemic steroids altogether, because you cannot keep patients on them indefinitely—and you’re also blunting the ability of their macrophages to remove the collagen or the collagen descending into the fat, where it is removed. If I attempt intralesional steroids, I’m very conservative, because I worry about the possibility of atrophy. Therefore, I use only 1 mL per cc at 3 to 4-week intervals. I would never retreat this patient with collagen.

It is important to recognize that injecting collagen is very time-consuming and extraordinarily technique-dependent. This is not a procedure to be performed by a nonphysician.