



# The Evolving Art of Aesthetics

## NEW TOOLS AND TECHNOLOGIES

*New facial fillers, lasers and radiofrequency therapies are expanding the nonsurgical options for facial rejuvenation. The popularity of these less-invasive procedures reflects patients' desire for minimal downtime and more natural-looking results.*

**B**lepharoplasty, brow-lifts and face-lifts are the current mainstay of cosmetic surgery.

But new products and an enlightened understanding of facial aging are allowing many patients to forgo or delay conventional oculofacial plastic surgery. The development of new dermal fillers and advances in laser and radiofrequency technology are in sync with a new emphasis on restoring facial volume and skin quality, something that lifting procedures cannot do.

For the most part, the new tools and technologies are expanding the treatment options, not replacing the familiar ones like botulinum toxin type A (Botox). "The techniques are not interchangeable. Each one, be it Botox or fillers or surgery, does something quite specific, and they don't solve the same problems," said Rona Z. Silkiss, MD, chief of oculofacial plastic surgery at California Pacific Medical Center in San Francisco.

Botox is excellent for dynamic wrinkles such as the horizontal lines in the forehead or vertical lines between the brows, Dr. Silkiss noted, whereas fillers work best for wrinkles

or contour deficiencies at rest. Moreover, an individual's needs change over time, she noted. In particular, Botox and fillers are wonderful tools when used correctly, but they cannot address significant aging-related skin laxity, she said. This may instead require a radiofrequency tightening or lifting procedure in association with volume enhancement.

### **Dermal Fillers Turn Up the Volume**

Tanuj Nakra, MD, an oculoplastic surgeon with Texas Oculoplastic Consultants in Austin, evaluates each new patient for three major changes that occur with facial aging: volume loss, sun damage and soft tissue descent. Recognition of the importance of volume loss has grown in recent years.

"Cosmetic surgeons are becoming much more aware of the concept of facial volume loss with aging," Dr. Nakra said. "We are losing vol-

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*Adding Youthful Volume.* Before (1) and after (2) facial volumization with 5 cc of Perlane.

ume over time, so filling the areas around the eyes and the face is a more natural and effective approach to rejuvenation compared with some of the older surgical procedures that lift, tuck and pull.” Fillers do a good job of addressing this issue, he added, because they treat facial aging sometimes more effectively than surgery can.

“As we age, we lose collagen in our skin, and we lose some of that beautiful subcutaneous fat in our faces,” Dr. Silkiss said. “We have an overall deflation of the face, and fillers are a nice way of restoring some of that youthful volume to specific contours.” She added that fillers also are a good option for patients who do not have the inclination or financial means to do something more invasive and just want to stave off some of the aging-related changes they are experiencing.

Michael S. McCracken, MD, an oculoplastic surgeon at the McCracken Eye and Face Institute in Parker, Colo., noted that the use of fillers is continuing to evolve. “People are injecting more often into the nose, tear troughs, cheeks and hands.” Moreover, he said, the effect of direct-to-consumer advertising is having a growing influence on patients’ choices of treatments. He also sees the interest in offering facial rejuvenation procedures expanding beyond oculoplastic surgeons to include general ophthalmologists as well.

Here’s what to expect from the currently available dermal fillers:

**Hyaluronic acid fillers.** Hyaluronic acid fill-

ers include products like Restylane (Medicis), Juvéderm (Allergan) and Perlane (Medicis). They are especially good for lips and other areas where a softer fill is desired. Hyaluronic acid fillers are also the most forgiving, as injecting hyaluronidase into the treated area can easily dissolve them. This reversibility can be reassuring to patients who are just starting out with fillers, or when the filler is being used in a more challenging area, like the tear trough region with its thin overlying skin.

Dr. Nakra noted that fillers injected into the eyebrow fat pad and tear troughs are especially effective in improving the hollows around the eyes. By plumping up the deflated brow fat pad, the filler actually elevates the brow, similar to what happens when air is pumped into a deflated balloon. Filling a patient’s drooping cheeks at the same time can give the face a natural, rejuvenated look.

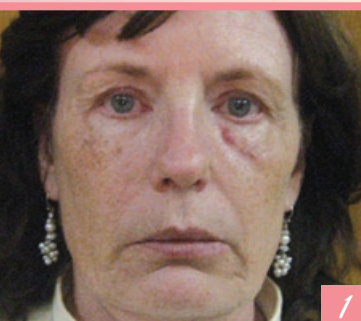
The hyaluronic acid fillers are versatile, with effects that can last from about six months to as long as 18 months. Moreover, there may be a subtle effect that lasts even longer. University of Michigan researchers have documented hyaluronic acid’s ability to stimulate collagen synthesis and partially restore dermal matrix components that are lost in photodamaged skin.<sup>1</sup> In another report, the Michigan team presented evidence that collagen fragmentation is responsible for loss of structural integrity and impaired fibroblast functioning in aging skin and that treatments known to stimulate production of new collagen—such as topical retinoic acid, CO<sub>2</sub> laser resurfacing and intradermal injection of hyaluronic acid—can improve both the appearance and health of aging skin.<sup>2</sup>

**Radiesse.** Radiesse (BioForm Medical) is a dermal filler made from microspheres of calcium hydroxylapatite, which provide a matrix for tissue ingrowth. “Radiesse is nice for areas where you want a deeper fill, such as for someone who has deep nasojugal lines, or if you want to lift up the mid-face a little with a colloid cheek-lift,” Dr. Silkiss said. “Radiesse lasts one to two years, and it can be mixed with a local anesthetic, off-label, to make the injections less uncomfortable.”

**Autologous fat transfers.** Fat transfers are another way to address volume loss. “They accomplish what filler augmentation can do around the eyes” but with longer-lasting results, Dr. Nakra said. “Fat transfer is my favorite approach to comprehensive facial rejuvenation. However, an important precaution is to make sure that the fat is injected into the

*For Deeper Fills.*

Radiesse should never be injected into the tear trough (see red nodule in left lower lid) (1) or the lips (see lip nodule) (2).



deeper planes to avoid any lumpiness or irregularities that might occur if it were injected more superficially.”

Dr. Silkiss noted that it’s difficult to get uniform results with fat transfers because there is not a consistent 1-to-1 ratio of fat retention. The tear trough region is the most difficult to treat, she said, because the skin is so thin that the tolerance for lumps and bumps is very small. “With a hyaluronic acid filler, irregularities can be melted away with hyaluronidase, but we don’t have that luxury with fat.”

Dr. McCracken said he has seen some good results from autologous fat transfers, but he does not perform them. He noted that they are very technique-dependent and can be somewhat unpredictable. Moreover, if complications occur, they can be difficult to handle because the fat is injected into multiple tissue planes and is distributed so diffusely.

**Sculptra.** Sculptra (Sanofi-Aventis) is FDA-approved only for lipoatrophy associated with HIV/AIDS and is very expensive compared with the other fillers. It has a greater potential than other treatments to produce granulomas. However, Sculptra may have the power to produce more comprehensive facial volume augmentation, said Dr. Nakra.

**Collagen.** This early dermal filler still has its devotees in the patient population. But collagen’s small risk of allergic reaction and the resulting need to perform skin testing has led many physicians to opt for the newer fillers instead.

In general, fillers do a good job of plumping up lips and cheeks and reducing the appearance of lines around the mouth and nose. They can help a patient avoid or stave off cosmetic surgery, and they require little to no downtime. The main drawback for patients is that the effects disappear over time, and the cost of repeated injections adds up quickly.



### What About Botox?

Botox remains firmly ensconced as the best nonsurgical preventive and treatment for dynamic wrinkles in the upper face. The paralytic agent relaxes procerus furrows and horizontal lines in the forehead and can keep them from becoming deeply entrenched—something fillers cannot do. “The forehead occupies a third of the face, so if you can relax that area, you have gone a long way toward giving someone a rejuvenated look,” Dr. Silkiss noted. “Botox also can be used for crow’s feet and vertical lines around the mouth, and it can be injected into the platysmal bands in the neck.”

Botox typically lasts three to four months. It’s easy to administer with only a topical numbing cream, and it usually begins to take effect within a few days. “There are few things that are a home run in the aesthetic arena, and Botox is one of them,” Dr. Silkiss said. “I’ve rarely seen a disappointed Botox patient.”

Using Botox along with hyaluronic acid filler has been found to increase the effects of the filler and to extend its longevity by up to 50 percent.<sup>3</sup> Approval of a new botulinum toxin type A is expected sometime this year. Already marketed in Europe and South America as Dysport (Ipsen), the American version will be called Reloxin (Medicis). Reloxin purportedly begins to take effect a few days sooner than Botox and may last a little longer.<sup>4</sup>

**Bad Treatment Corrected.** This patient’s tear troughs were overcorrected with Restylane (1). The “after” photograph was taken immediately after massage of the Restylane (2).

**Slight asymmetries in the periocular area are not uncommon** and should be identified and pointed out to the patient before treatment, according to Dr. Nakra. Whenever possible, correcting the asymmetries should be part of the treatment plan.

“Patients often don’t notice their own minor asymmetries,” he said. “But after treatment, they will be looking at themselves more critically than they ever have before, and asymmetries may become more obvious to them.” Asymmetries can be corrected with surgery, asymmetric filling with fillers or fat transfers, or Botox injections.

“If someone has 1 millimeter of relative ptosis on one side, a few units of Botox can be utilized in the pretarsal orbicularis of both the upper and lower eyelid to achieve a 1-millimeter reduction of ptosis on that side,” Dr. Nakra said. “Botox can also be used to make adjustments to eyebrow position. For example, if someone has relative eyebrow ptosis on one side, more Botox to the eyebrow depressors on that side can achieve a little eyebrow elevation and improve some of the asymmetry.”

## Address Facial Asymmetries





### Clearing Up Problem Spots.

Untreated acne scars (1). Following three treatments with the “lunchtime laser” (2).

### Restoring Sun-Damaged Skin

Years of sun exposure on unprotected skin leads to loss of elasticity, pigment changes and actinic spots. Nonablative procedures, such as intense pulsed light (IPL) treatments, are a minimally invasive way to improve skin quality. Ablative procedures, including deep chemical peels and CO<sub>2</sub> laser treatment, produce more dramatic results but require a downtime ranging from about a week to several weeks depending on the technology and the aggressiveness of the individual treatment.

**Chemical peels.** Chemical peels reduce fine lines, wrinkles and age spots and can improve skin texture. “Chemical peels—typically 30 percent trichloroacetic acid—strip off the top layer of epithelium and allow the skin to regenerate from below,” Dr. Nakra noted. “Chemical peels are generally safe for various complexions

and ethnicities. There is about a one-week down period in which the skin is flaking, and patients can have post-treatment redness that can be cosmetically obvious until they get about a week to a week-and-a-half out from the procedure.”

**CO<sub>2</sub> laser resurfacing.** “CO<sub>2</sub> laser resurfacing is more aggressive than a chemical peel and can get down deeper into the skin layers,” Dr. Nakra added. “It sometimes has a two- to three-week down period, but it also has the potential to produce the most dramatic improvements in patients who have very deep wrinkles and extensive sun damage.”

Dr. Silkiss noted that the CO<sub>2</sub> laser has been the workhorse technology for heating the skin to cause collagen contraction. “It does work. But the negative is that you are also ablating the surface of the skin and there is a long recovery time. It also isn’t good for all skin types. For some patients of Mediterranean, Hispanic or African heritage, the risk of pigmentation changes may be too high.”

**Fractionated energy.** Devices that rely on fractionated energy, like the Fraxel laser (Reliant Technologies), deliver the heat in a Swiss cheese or polka-dot pattern, which does not ablate the entire skin surface. “By avoiding complete skin surface ablation, the downtime is much less, and the patient can receive a treat-

## Facial Fillers: Avoid Common Pitfalls

**Dr. McCracken has some practical advice for ophthalmologists** who are considering adding facial fillers to their practice:

- Seek professional training first.
- Start with the more “forgiving” hyaluronic acid or collagen, not Radiesse or Sculptra.
- To avoid injecting an intra-arterial bolus, inject slowly, without too much force, and keep the needle moving.
- Do not inject too superficially, especially in the tear troughs. Deeper injection can avoid the Tyndall effect and visible lumpiness.
- Try massaging the tear troughs if lumpiness occurs.
- Use caution with fillers on tear troughs with very thin, crepelike skin.
- Avoid overinjection, which can lead to necrosis.
- Know the signs of impending necrosis (pain or blanching, erythema or purple splotches on the skin).
- Manage patient discomfort. Even products containing lidocaine do not completely suppress pain. Use blocks on sensitive areas, such as lips.



- Do not overfill lips. Use little or no filler in the philtral columns. To avoid a “duck look,” inject most of the filler below the vermilion border of the upper lip.
- Think subtle and natural. Less is often more.

**Watch For Problems.** It’s important to recognize the signs of impending necrosis, as shown in this photo.

ment of laser energy into the deeper layers of skin, where it can promote collagen development,” Dr. Nakra said.

**Erbium lasers.** Dr. McCracken uses a Sciton erbium laser with several modalities. “We use the erbium laser for superficial peels—or micropeels—as well as for deeper laser resurfacing,” he said. “I believe it is much safer than a CO<sub>2</sub> laser. It may not be quite as effective, but it gives nice results. It does not pose nearly the risk of hypopigmentation that a CO<sub>2</sub> laser does, and the downtime appears to be less.” Dr. McCracken’s Sciton also has a broadband light instrument—similar to other companies’ intense pulsed light devices—that can improve pigmentation and treat telangiectasia.

Dr. McCracken also uses a Sciton 1319 Nd:YAG laser, which is known as the “lunchtime laser” because it requires no downtime. It stimulates collagen and produces subtle results that take about six months to develop.

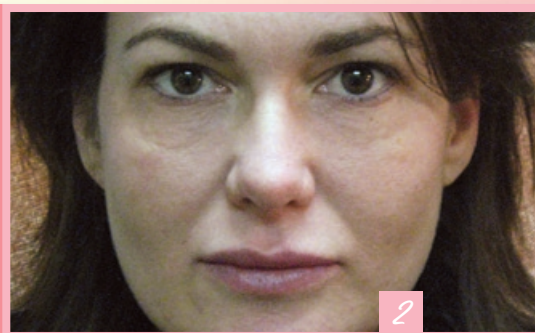
**Radiofrequency energy.** The Thermage device (Thermage) delivers radiofrequency energy under the skin surface to produce skin tightening. Dr. Silkiss said the latest Thermage is much improved over the original. “Treatment with the initial unit was very painful. This has improved significantly with the new tips and treatment parameters. You do see some skin tightening, and there is no downtime.”

### Lush Eyelashes Are the Latest Buzz

Latisse, the recently approved eyelash stimulator, is a new application for bimatoprost and capitalizes on one of the side effects—lush lash growth and darkening pigmentation of the eyelashes—of its parent product, the ocular hypotensive Lumigan. Thinning eyelashes are another frustrating age-related change, and Dr. Silkiss said her patients have been waiting for a product like this. Allergan created Latisse by repackaging Lumigan to be applied in a viscous solution to the base of the eyelashes.

“I think Latisse is going to be very effective,” Dr. Silkiss said. “But it’s a new product, and we are going to have to be careful to observe and monitor patients for the development of increased skin and iris pigmentation. Although the company says the incidence of increased skin or iris pigmentation is very close to zero, we are going to have to see what the real-world experience is over time. Nevertheless, it is still an exciting product.”

The recent availability of Latisse, dermal fillers and other minimally invasive technologies offer aesthetically inclined ophthalmolo-



gists the opportunity to expand their practices. Adding facial rejuvenation services can be rewarding for patients, many of whom may be more comfortable in pursuing cosmetic procedures with their trusted physician. From the ophthalmologist’s standpoint, these additional fee-for-service procedures can provide a welcome boost to a practice’s bottom line.

1 Wang, F. et al. *Arch Dermatol* 2007;143(2):155–163.

2 Fisher, G. J. et al. *Arch Dermatol* 2008;144(5):666–672.

3 Rohrich, R. J. et al. *Plast Reconstr Surg* 2007;120(6 Suppl):41S–54S.

4 Typically, Botox starts to take effect in three to five days, although it may take up to two weeks for the full effect to be apparent.

*EyeNet* thanks Dr. McCracken for all his help with art for this story.

### Lunchtime Laser.

Before (1) and after (2) lower lid Sciton laser resurfacing followed by Restylane injection to the tear trough.

## Meet the Experts

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