The emergence of new filler agents in the past year and a half has been nothing short of explosive. Whereas collagen reigned as the lone filler option for close to a quarter century, dermatologists now choose from a large and growing assortment of filler agents for correcting fine and deep lines and adding volume.

While the rapid emergence of so many agents can challenge physicians who seek to stay up-to-date on the various options, the sheer number of available agents is a tremendous benefit to physicians and patients. Rather than having to identify the filler for a particular patient or type of presentation, we may now artfully combine various fillers and other cosmetic interventions in order to achieve the best overall aesthetic result. In order to skillfully select and use fillers in the clinic, dermatologists must know each agent’s strengths and weaknesses and be prepared to provide patients a comfortable, convenient, and rewarding experience.

**General Concepts**

Regardless of the agent or agents used, patient (and physician) satisfaction will depend on several essential elements. For discussion, these may be grouped into three main cate-
DERMATOLOGY

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Patient Comfort. The provision of aesthetic services is different from the care of cutaneous disease. Patients come to you largely because they want to. This is reflected in the notion of “desire dermatology” versus “disease dermatology.” Patients who don’t feel comfortable—either physically during the injection process or in a more general sense with you and your practice—may not return for further treatments. But patients who are comfortable and satisfied with the results of treatment will return for repeat treatments and may eventually pursue other aesthetic treatments and services as well. Effective anesthesia, described below, will ensure physical comfort.

To further enhance satisfaction, advise all patients preparing for treatment with fillers to discontinue use of vitamin E, aspirin, and other non-steroidal anti-inflammatory agents for a week ahead of treatment to reduce the risk of bruising post-treatment. If possible, patients taking warfarin should also discontinue the drug a few days prior to injection.

Effective Communication. Open communication helps promote a general sense of comfort with you and your practice. Assess each patient’s expectations to ensure that they are realistic. Patients with unrealistic expectations pose significant long-term challenges. Tell such patients you simply cannot provide the results they wish and encourage them to seek treatment elsewhere, if necessary.

Additionally, it’s important for dermatologists to listen carefully to patient concerns and to permit open communication. One strategy I have adopted and consider integral to the treatment process is to allow each cosmetic patient to look at themselves in a mirror and point out their areas of concern. It’s sometimes surprising to learn that the line or wrinkle you might have targeted is not the patient’s primary concern; they may be more concerned by a complaint you judged less significant.

Schedule two-week follow-up visits for all of your aesthetic patients. It allows you to assess the results of treatment and determine whether “adjustments” or additional treatments are needed. It also allows you to truly assess the patient’s satisfaction or dissatisfaction with treatment. Some patients who are unhappy with the results of treatment may not contact your office to tell you they are displeased, but they will probably tell family, friends, and other potential patients. It’s better to give patients the opportunity to tell you they need adjustments rather than to have them discourage others from seeking treatment from you.

Reliable Documentation. Dermatologists recognize the role of informed consent in enhancing patient education and providing legal protection to the provider. I admonish all dermatologists to be diligent in obtaining signed informed consent from every aesthetic patient. This is particularly important when using agents off-label. Note that Sculptra (poly-L-lactic acid, Dermik Aesthetics) is approved only for the treatment of HIV-associated lipoatrophy. Patients must clearly understand and agree to any off-label use. Although we as physicians are permitted to and know how to safely use agents “off-label,” in the event of future dissatisfaction, it’s best to have the consent in the patient’s file.

Photo documentation also plays a critical role in aesthetic practices. As a Mohs surgeon, I have long relied on photos to document patient treatment. Now I rely on photos for all my cosmetic patients, too. The vast majority of patients are thrilled with the results of cosmetic therapies, but some patients have an uncanny ability to “forget” how they looked prior to treatment. They may report that they “don’t see a difference” or think the treatment “didn’t do anything.” By documenting the patient’s appearance prior to therapy, photos allow the patient to compare pre- and post-treatment.

The choice of camera depends on your preference, your budget, and your technical skill. You don’t need bells and whistles, but I recommend investing in a good quality digital camera that is easy to operate both at the time of image capture and when storing and printing. I save and use color images for presentations, etc. For inclusion in the patient’s file, I feel a good quality, black and white, plain paper print is sufficient. An adequate digital camera that produces good black and white prints will produce an image with enough detail for patients to see improvements.

Sorting The Options

Although we in the US now have a large selection of filler agents available, there are still numerous fillers available in Europe and around the world that haven’t been approved here yet (Table 1). There are still more agents to come—some are at various stages in the FDA approval process. Below, I’ll quickly review some of the most popular options.

Collagen

Collagen is the gold standard of dermal fillers, used for over 25 years with few reported serious reactions. Human collagen products (Cosmoderm and Cosmoplast, Inamed Aesthetics) are not associated with allergic reactions while bovine collagen products (Zyderm I, II and Zyplast, Inamed Aesthetics) are. Before using Zyderm or Zyplast, conduct two allergy tests. Treatment should occur six weeks after the first test. Patients may question the safety of bovine collagen in the age of BSE (bovine spongiform encephalopathy).
encephalopathy or “Mad Cow”). Note that the bovine collagen products come from a protected herd in Northern California and do not pose a BSE risk.

Aside from treatment delay associated with allergy testing for bovine collagen, the primary drawbacks of either form of collagen are the need for refrigeration and the short duration of action. While this is not a significant hindrance, it bears consideration. Practicing in Florida, I must consider the risks of hurricane-associated power-outages and subsequent wasting of collagen products.

The human collagen products are very cost effective and have the benefit of no associated allergies or required testing. Like bovine products, they are formulated with lidocaine, which adds to the comfort of application. Consider conducting a skin test on Cosmoderm or Cosmoplast patients to prepare for the possibility of a future switch to Zyderm or Zyplast.

Cosmoplast and Zyplast are injected into the mid-to-deep dermis, while Zyderm or Cosmoderm are injected into the upper dermis. Layering of Cosmoderm over Cosmoplast provides a better result than either agent alone. As discussed below, other filler combinations are also possible.

**Hyaluronic Acid**

Non-animal stabilized hyaluronic acid is derived from the celosia or cockscomb. Unlike collagen-based products, these polysaccharides do not require refrigeration or allergy testing. Results also last somewhat longer than with collagen, typically three to nine months, depending on the product and application site. Dermatologists and their patients should view the non-permanent nature of these filler agents as a benefit. True, the patient is forced to return on a regular basis for retreatment. However, if the patient is not happy with the results of therapy, they simply wait a few months to return to their pre-treatment appearance. Using fillers is very much an art, and dermatologists can make subtle changes from treatment-to-treatment to enhance cosmesis.

Recently-approved Captique and Hylaform Plus gel from Inamed Aesthetics have larger particle sizes than Hylaform gel, allowing for treatment of deeper or more severe wrinkling. Restylane (Medicis) is another option used for moderate to severe wrinkling and is placed in the mid-dermis. In the coming months, anticipate approval and release of Restylane Fine-lines, which is placed more superficially for less significant wrinkling. Also in the pipeline are Perlane (Medicis) and Juvederm 18, 24, 30 (Inamed), which will be available in three different particle sizes.

Patients may develop unpredictable, transient post-treatment edema and erythema, which is occasionally intense, and ecchymoses. Be sure patients don’t expect to receive treatment shortly before a wedding or other significant social event. Following injection, massage the application site to smooth any “lumpiness” immediately post-application in the office only. Patients should not massage the area thereafter. Triamcinolone injection may be necessary to diminish rare cases of significant persistent lumpiness.

Two areas I have found satisfying to treat with hyaluronic acid are the earlobes, which some women find lose “plumpness” with age or following a facelift procedure, as well as for scar correc-

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**Table 1.**

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<th>Dermal Fillers Available World-Wide; Not all FDA-approved or Available in the US.</th>
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<td><strong>Endoplast-50</strong></td>
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<td><strong>Evolution</strong></td>
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One strategy I have adopted and consider integral to the treatment process is to allow each cosmetic patient to look at themselves in a mirror and point out their areas of concern.

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tions following Mohs surgery. I find the fillers helpful to add volume under healed graft sites, such as on the tip of the nose.

**Poly-1-lactic Acid**
Sculptra is best described as a volumizer rather than a filler. It is not intended for correction of individual lines and wrinkles, rather it helps to lift and fill the treatment area. Sculptra does not require allergy testing and is described as long-lasting—18 to 24 months and maybe longer. Therefore, it's not permanent, but it is enduring.

The package insert for Sculptra recommends reconstitution two hours prior to use; however I find that I achieve best results when I reconstitute the evening before using 4cc sterile water and 1cc zylocaine with epinephrine.

For injection, I use a 26-guage needle with a BD luer lock syringe. The material is deposited with a tunneling technique into the sub-cutis. Massage the injection site immediately post-application. I instruct patients to continue to massage the application area twice a day for one week.

Applications may be repeated at four-week intervals until the desired level of fullness is obtained.

**Other Current and Future Options**
Fat transfer has a long history of use, and autologous fat is considered one of the safest fillers. Generally considered “more permanent” than other fillers, the duration of effect varies based on treatment site. The graft supply is relatively abundant. One drawback is that treatment requires two procedures: harvesting and grafting.

Artecoll (polymethylmethacrylate microspheres suspended in bovine collagen, Artes Medical) is a permanent filler that is forthcoming. Because of the bovine collagen component, the treatment requires skin testing, and the product must be refrigerated.

The Isolagen Process (Isolagen), which uses the patient’s own harvested fibroblasts to grow additional fibroblasts, is on the horizon. Treatment is long-lasting and the autologous nature of the material obviates allergy concerns.

Silicone is used off-label as a dermal filler. The material is permanent; in the event of dissatisfaction, the silicone must be cut out. Silicone’s primary benefits are that it remains pliable and is relatively inexpensive.

Radiesse (calcium hydroxylapatite in a polysaccharide gel, BioForm Medical) is used off-label for skin and is especially good for treating naso-labial folds. Results last up to 12 months. Injection is sub-dermal and can be quite painful.

**Combinations and Injection Tips**
Depending on the type and severity of the patient’s concern, a single dermal filler agent may yield satisfactory results. However, dermatologists should think creatively about the use of fillers. Combining different agents—layering a sub-dermal agent over a dermal one—can create a very satisfactory appearance.

Don't forget that fillers can—and often should—be used in combination with a range of other aesthetic treatments and services. Some have observed that the upper half of the face is the province of Botox (botulinum toxin, Allergan), while fillers work best on the bottom half. But don't limit yourself.

I have found that the combination of dermal fillers for lip augmentation combined with a touch of Botox in the depressor angularis oris helps produce that full, pouty look so many patients desire.

Don't forget that successful application of dermal fillers often depends on achieving balance and symmetry. This is obviously more important for some areas (such as the lips) versus others. A common mistake is to “over-treat” one side of the lip, for example, to be left with insufficient material to treat the other side.

Always watch the syringe as you provide treatment. The goal is to use about three-quarters of the available material to approximate the desired effect, reserving one-quarter for correction and adjustment. Once you have injected about three-quarters of a syringe, step back and assess the result. If it’s close to the desired effect, allow the patient to look in the mirror. Together, identify
areas for adjustment and use the reserved material to treat accordingly during the same office visit.

Billing and Payment Issues
Pricing for filler agents varies across the country. Seek advice from consultants knowledgeable of your area and from the manufacturers themselves to determine rates for therapy. Charge by quantity. In my practice, each patient purchases filler “by the syringe.” Regardless of whether he or she requires the full syringe, the patient must pay for the full amount of material. Any unused material must be discarded. Do not save unused material for future use by that patient. Start with fresh material at each treatment session.

Some clinicians believe it’s permissible to save unused material for “touch-up” treatments at future office visits. This, in my opinion, sets up a medico-legal risk and is unadvisable. Patients in my office do not receive filler “touch-ups.” If adjustments are necessary, they receive additional treatments, beginning with a full syringe of fresh material.

Note that Dermik Aesthetics provides payment assistance for qualified patients treated for HIV-associated lipoatrophy who cannot otherwise afford treatment for this medical condition. To learn more about the patient assistance program (PAP) or determine if a patient qualifies, visit www.sculptra.com or call 1-888-SCULPTRA and select option number 4.

Knowledge, Skill, and Creativity
The various dermal fillers comprise an extensive palette dermatologists can use to provide patients the cosmetic results they desire. Few artists produce masterpieces in monochrome. Similarly, dermatologists should realize that achieving the most impressive, natural-looking, and acceptable aesthetic result may require the combined use of multiple agents or interventions. No doubt dermatologists have the medical knowledge and skill to provide aesthetic services in a safe and effective manner. With just a bit of creativity, the experience becomes more enjoyable and extremely rewarding.

The combination of dermal fillers for lip augmentation combined with a touch of Botox in the depressor angularis oris helps produce that full, pouty look so many patients desire.

Anesthetics in Aesthetics
In traditional medical dermatology, patients must sometimes endure a bit of discomfort or pain in order to combat disease (consider corticosteroid injections for nail psoriasis). But with aesthetic services, as the focus shifts from disease dermatology to desire dermatology, patients tend to be less willing to endure discomfort. Of course they’ll endure pain and long healing times in exchange for the dramatic improvement offered by CO2 resurfacing, but for the most part, they want interventions that cause minimal discomfort and require little to no downtime. Luckily, fillers can fit that bill. Especially with interventions that require regular re-treatments, keeping pain to a minimum helps ensure that patients will return to your office.

One of my favorite topical anesthetics is Betacaine Plus (Theraderm, Inc.), which patients prefer and have found very effective. Other topical options include LMX5 (Ferndale Labs) and Cetacaine (Cetylite Industries).

Septocaine (Septodont, Inc.) is a good choice for providing a mini-block when treating the lips. Apply topical anesthetic, such as Hurricane gel, to mucous membrane then use a dental syringe and dental cartridge to provide a mini-block. Advantages include rapid onset and short duration.