

Preventing, Identifying, and Managing Cosmetic Procedure Complications, Part 2: Lasers and Chemical Peels



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Part 1 of this series highlighted some of the potential complications that have been associated with soft tissue augmentation and botulinum toxin injections. In part 2, tips for how dermatology residents may prevent, identify, and manage complications from lasers and chemical peels for optimal patient outcomes are provided.

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The primary cosmetic procedures that dermatology residents will perform or assist in performing during their training are soft-tissue augmentation, botulinum toxin injections, laser therapy, and chemical peels. Because complications can occur from these procedures, it is important for residents to learn how to prevent, identify, and manage them for optimal patient outcomes. In part 2 of this series, laser therapy and chemical peels are discussed.

Lasers

In dermatology, lasers are used to treat dyschromia, resurface scars, remove skin growths, and rejuvenate aging skin.^{1,2} Ablative resurfacing lasers such as the CO₂ laser are the most likely to lead to unwanted

side effects. There is a risk for herpes simplex virus reactivation, impetigo, persistent erythema, dyschromia, and scarring.¹⁻³ Some patients who undergo facial ablative resurfacing may develop a visible hypopigmented line of demarcation between treated and untreated skin along the jawline.³ With the development of fractional resurfacing lasers, the risk for dyschromia, persistent erythema, and scarring was lessened.¹⁻³

Regardless of the type of resurfacing laser used, patients should be given adequate prophylaxis with an antiviral and antibiotic. For skin of color, fractional resurfacing lasers should be set at lower density settings with a higher fluence.¹⁻³ Sites with fewer adnexal structures (eg, neck, dorsal hands) also should be treated at lower densities.³ When using Q-switched lasers that target pigment, caution should be used to avoid vesicle formation and/or skin crusting, which may lead to scarring or dyschromia.¹⁻³ Some tattoo inks may paradoxically darken when treated with lasers.³ A test spot is advised, especially prior to treatment of permanent makeup tattoos. A pigmented lesion should never be treated if the diagnosis is unclear (eg, a biopsy to establish the diagnosis may be the best appropriate step for some pigmented lesions). For laser hair removal, the Nd:YAG laser is the safest for skin of color.^{2,3}

Lasers that target vascular structures may cause unwanted purpura, hypopigmentation, or thermal injury.¹⁻³ A larger spot size may help decrease the risk for purpura. The skin should be cooled properly and caution should be used to avoid pulse stacking. For intense pulsed light devices, overlap pulses slightly to avoid a zebra-like pattern of slivers of untreated skin.¹⁻³ For all laser procedures, strict sun protection is advised before and after the procedure.

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Chemical Peels

Chemical peels are versatile and varied in their composition. They are categorized based on the depth to which the skin is affected by the peel: superficial (stratum corneum), medium (full-thickness epidermis), or deep (mid reticular dermis).⁴ Peels are most commonly used to treat dyschromia, aging, rhytides, actinic damage, and superficial scars.^{4,5} The success of a chemical peel depends largely on patient selection and preprocedure preparation. Patients who tend to develop postinflammatory hyperpigmentation, have an underlying inflammatory or scarring skin disorder, are on photosensitizing medications, or have continued work- or hobby-related sun exposure are generally poor peel candidates.^{4,5} Strict sun protection should be advised both before and after a chemical peel.

While in training, residents are unlikely to perform a medium or deep peel. Superficial peels can be accomplished with trichloroacetic acid 10%, glycolic acid (GA) 30% to 50%, salicylic acid (SA) 20% to 30%, Jessner solution (SA, lactic acid, and resorcinol with ethanol), and tretinoin 1% to 5%.⁴ Glycolic acid and SA are known to be safer for patients with skin of color.^{4,5}

Care should always be taken to prepare the skin for an even peel. Mild peeling agents such as tretinoin or adapalene may be used to prepare the skin in the weeks before the procedure.⁴ Skin of color may benefit from hydroquinone used before and after a chemical peel.⁵ At the time of the peel, acetone can be used to degrease the skin for a more even, effective peel. If a peel needs to be neutralized (eg, GA), make sure to have the neutralization solution on hand, as leaving the peel solution on for too long can lead to severe epidermolysis, which can be visualized by a graying of the skin and will not be seen with

a properly performed superficial peel.⁴ Care should be taken at all times to protect the patient's eyes. Eye flushes should be readily available. The medial canthus and perinasal folds may be protected with petrolatum. For a superficial peel, some desquamation (less with GA) and erythema may be noted for a few days.

Final Thoughts

For any cosmetic procedure, the patient's expectations should be discussed. The provider may adeptly guide the patient toward realistic expectations for the procedure. Pretreatment and posttreatment photographs should always be taken to help document treatment progress; it may be helpful to show the patient the photographs at each visit. The expected skin reactions, recovery time, and risks should be fully discussed. Full informed consent should be obtained. Complications from cosmetic procedures will inevitably arise. As residents, we can take the opportunity to learn how to prevent, identify, and manage them.

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