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Peels and Hyperpigmentation

How to avoid the risks when treating darker skin

by Pamela Springer

When chemical peeling with glycolic acid became popular in the 1980s, women flocked to dermatologists and estheticians for these “lunchtime peels.” When performed correctly, a peel stimulates the production of collagen and healthy new skin cells, and diminishes signs of aging. Yet many estheticians have valid concerns about using them on darker skin, fearing possible complications, including postinflammatory hyperpigmentation (PIH), hypopigmentation, and scarring.

Generally, peels and other exfoliating agents are used to resolve photodamage, fine lines and wrinkles, and dyschromias (the brown spots associated with aging). These conditions are most often seen in individuals with lighter skin coloring, Fitzpatrick I–III (see page 15 for a refresher on the Fitzpatrick scale). Those with pigmented skin, Fitzpatrick IV–VI, are more likely to have conditions such as dark postacne lesions, hyperkeratosis, pigmentary reactions, pseudofolliculitis barbae, or textural changes. But despite the disparities, dark skin is not as complex as one would imagine, and it will respond well to superficial chemical peeling as long as certain protocols are followed.

The risk of complications is increased if the chemical is allowed to penetrate deeply (whether deliberately, or at the site of any abrasions). To limit the risk, professionals should seek specialized training prior to administering chemical peels on darker skin tones—and, of course, should never work outside their scope of practice.

What is Hyperpigmentation?

Hyperpigmentation—dark blotches on the skin—occurs equally in men and women, but more frequently in dark-skinned individuals. Some common causes are aging, allergic reactions, cosmetic irritants, excessive sun exposure, inflammation, insect bites, photosensitizing ingredients, shaving, skin abrasions, and skin disorders such as acne and eczema. Depending upon the depth of the pigmentation, the treatment of this skin disorder can be taxing, requiring three to six months to achieve the desired results.

There are two types of hyperpigmentation. The first is epidermal melanosis, in which melanin production is increased in certain areas of the skin and pigment is subsequently transferred to surrounding keratinocytes. A variety of options have proven effective against this type. The second type is dermal melanosis, which occurs when inflammation causes melanin pigment to become trapped in the papillary dermis. There is no permanent solution for dermal melanosis, but the lesions can be lightened.

Treatment for either type should begin with skin-lightening agents such as azelaic acid, hydroquinone, kojic acid, or retinoids, either alone or in combination. The use of a broad-spectrum sunscreen is most important to prevent further darkening of the lesions.

Assessing Your Client

Not every pigmented skin that is blotchy or has dark spots will be resolved with a chemical exfoliation.

During the initial consultation, it is important to take an extensive history, especially noting any contraindications. Is the client prone to keloids? Is he or she on any medication? If you don't own a *Physician's Desk Reference* (PDR Network, 2011), which outlines contraindications for all prescription medications, check the online version at www.pdrhealth.com. For example, a client who is taking Tazorac or Accutane must avoid alpha hydroxy acids (AHAs). Some medications require the user to avoid aspirin, which means they would not be a candidate for any treatment or product containing salicylic acid.





Hyperpigmentation and acne on an African-American client, before and after treatment with a chemical peel. Images courtesy of Pamela Springer.

Perform a skin analysis using a skin scope or Wood's lamp. Black light can illuminate a variety of conditions. Dark spots, or PIH, will have a fluorescent appearance, signaling that the melanin deposits may be mostly epidermal. If the lesion is dermal, it may not respond to the black light. The use of these tools will also help you evaluate how dry or oily the skin is.

After assessing the skin's overall condition and noting any unusual problems, discuss what the client is most interested in correcting, taking into consideration both the analysis and the client's own input.

Preparing the Skin

The outcome of a chemical peel is determined by how well the skin has been prepared. For darker skin, the concern is avoiding PIH. Peels that penetrate too deeply can generate heat or erythema (redness) while on the skin, potentially altering melanin synthesis and/or causing abnormal melanin distribution. Deep penetration can also destroy the melanocyte, leaving an area of the skin void of color.

To decrease this risk, the client should be placed on a pretreatment home-care regimen for four to eight weeks (depending on how dark the skin is) prior to a scheduled light- or medium-depth peel. During this time, the goal is to either repair the acid mantle or to perform other treatments that will enhance the outcome of the peel. If the acid mantle is intact, the home-care regimen should consist of a skin-lightening agent, 2–5 percent glycolic products, and a full-spectrum sunscreen.

There should be visible reduction of dyschromias after two to three weeks of the home-care regimen. Priming the skin in this manner will go a long way toward eliminating post-peel complications.

Common Skin-Lightening Agents

It is important to know the mechanism of action when using skin-lightening agents. First and foremost, you must know the cause of the hyperpigmentation. This will determine the selection and management of the lightener to be used.

ARBUTIN

Studies have shown that arbutin is less effective than kojic acid for treating pigment disorders. It is not recommended as a priming product for light- to medium-depth peels.

HYDROQUINONE

This is the most effective agent on darker skin types, although its use is controversial due to the potential for adverse effects. It is one of the only inhibitors of melanogenesis. The mechanism of action is to inhibit tyrosinase activity, the enzyme that plays a major role in producing pigmented cells. A 2 percent formulation will provide visible improvement within four to six weeks, with the amount of improvement reaching a plateau after three to four months. The duration of use should be a maximum of four months, followed by a six-month break before any subsequent use.

KOJIC ACID

In concentrations from 1–4 percent, kojic acid prevents the melanocytes from being able to transfer pigment to the keratinocyte. Although effective as a skin-lightening gel, kojic acid has high sensitivity potential, and may also cause irritant contact dermatitis.

NIACINAMIDE

This is the active form of vitamin B3. When combined with retinyl palmitate and used over a four-week course of treatment, it improves skin lightening compared with using the ingredient alone. Niacinamide strengthens the skin's moisture barrier while improving tone and texture, a bonus for darker skins, which generally need moisture.

PAPER MULBERRY

Like hydroquinone, this is a tyrosinase inhibitor. It can cause a 50 percent reduction in tyrosinase activity when combined with kojic acid and hydroquinone.

Choosing a Peel

The selection of an appropriate peel within your scope of practice should take into account all the variables that may affect the amount of penetration, as well as your knowledge of the skin condition and the client's comfort level. These variables should begin with the client's Fitzpatrick skin type and the peeling agent's pH. Next, consider each of these questions:

- If the chosen peel is a lower-pH product, was the client's skin primed long enough?
- Has the client been compliant with professional treatments, home care, and the use of sunscreen in the pretreatment phase?
- Has the client purchased post-peel home-care products? Does he or she understand how to use them, and why these products are necessary to achieve the desired outcome?
- Do you have a signed consent form? (Consent forms for chemical peels and many other treatments can be found in the member area at www.ascpskincare.com.)
- Has there been a change in medications, general health, cosmetic procedures, or lifestyle?
- Has there been use of Retin-A in the last three weeks, or another chemical peel in the last week?
- Is there a possible allergic reaction to the selected peeling agent? All peels require a patch test prior to use.

Fitzpatrick Scale



I. Very fair; blond or red hair; light-colored eyes; freckles common.



II. Fair skinned; light eyes; light hair.



III. Very common skin type; fair; eye and hair color vary.



IV. Mediterranean Caucasian skin; medium to heavy pigmentation.



V. Mideastern skin; rarely sun sensitive.



VI. Black skin; rarely sun sensitive.



Further Reading

A. Paul Kelly and Susan C. Taylor, *Dermatology for Skin of Color* (McGraw-Hill Professional, 2009)

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Rebat M. Halder, *Dermatology and Dermatological Therapy of Pigmented Skin* (Informa Healthcare, 2005)

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Take into account the length of time the solution is on the skin. If the manufacturer suggests it remain on the skin for up to five minutes, a shorter time frame should be used for darker skin, e.g., 1 to 2 minutes. If this is tolerated, the time may be increased by one-minute increments on subsequent visits until the proposed five minutes is reached. This will prevent excessive burning or crusting of the skin, or a worst-case scenario that the agent will penetrate below the basal layer and cause depigmentation or scarring.

The following is a list of peeling agents recommended for darker skin tones.

- **Lactic acid** is part of the alpha hydroxy family. Its large molecule allows for a slower penetration, resulting in less irritation to the skin. At a pH of 2.5 to 3, it is a phenomenal agent for dry, sensitive, darker skins and causes no peeling. Unlike more aggressive peels, it is super hydrating.
- **Mandelic acid** is stable and not sensitive to light. The molecule is larger than that of glycolic acid, so penetration is slower. Studies show using this alpha hydroxy acid controls acne and abnormal pigmentation including melasma, as well as smoothes out rough, dry skin.
- **Pyruvic acid** in lower concentrations, when combined with lactic acid, promotes reduction of melasma, dark spots and patches, as well as seborrhea.
- **Citric acid** is a great alternative to glycolic acid. It can produce improvement in dyschromias, extended pores, fine lines, and melasma. Lower concentrations can be left on the skin without adverse reaction and can also be formulated for home use.
- **Salicylic acid**, a beta-hydroxy, is a derivative of aspirin also known as a salicylate. It helps decrease irritation and inflammation, and is recommended for treating acne vulgaris. Salicylic acid has also been proven to have anti-inflammatory and antimicrobial properties. Caution should be used with concentrations higher than 30 percent and a pH lower than 2.5.
- **Jessner's solution** combines salicylic and lactic acid with resorcinol in an ethanol base. It has antimicrobial properties. Jessner's is considered one of the most effective agents for smoothing and addressing textural changes in darker skin. It also addresses acne and oily skin by decreasing oil production and unplugging sebaceous follicles. There is also a formula that replaces the resorcinol with glycolic or citric acid; this version is suggested for more sensitive or reactive skins.

Post-Treatment Care

Sun protection is an absolute necessity in any professional post-treatment protocol. In the weeks after the peel, enzymes are recommended to exfoliate the skin, along with a vitamin C mask to expedite healing, and a vitamin C cream. Once there is only light flaking, reintroduce pretreatment home-care products, or add new ones as tolerated. §



Pamela Springer is a licensed esthetics educator, creator of the *Global Skin Solutions* corrective product line, and author of *Natural Radiance—A Guide for Ethnic Skin Care* (Global Skin Solutions Publishing, 2009). She is founder of The Skin & Makeup Institute of Arizona and the Academy of Advanced Aesthetics & Permanent Cosmetics. Visit www.pamelaspringer.com for more information.