

# Resurfacing Pigmented Skin: The Art of the Peel

Even with the advent of new and innovative methods for resurfacing skin, the trichloroacetic acid peel remains a safe, effective, and economical way to resurface dark skin

BY JOE NIAMTU, III, D.M.D.

Skin of color, pigmented skin, or the more contemporary term “global skin” is indicative of the melting pot of skin types seen by the cosmetic practitioner. Practicing in Richmond, Va., my patient population consists of many skin types, colors, and conditions. Mediterranean, African-American,

Asian, Hispanic, and Indo-Pakistani patients are routinely seeking care for skin care and rejuvenation. A major challenge in a cosmetic facial surgery practice is providing resurfacing

options for global skin types. These patients present with most of the problems seen in lighter skin patients, including actinic damage, acne and related scarring, and dyspigmentation disorders, but carry more caveats in terms of respective treatment. Anyone who performs aesthetic procedures is well aware of the dangers of resurfacing pigmented skin, particularly the reactivity of melanocytes that can lead to temporary or permanent hyper- and hypopigmentation (Figure 1). For patients with a Fitzpatrick skin type IV or V presenting with acne scarring, I cannot offer significantly effective options, whereas patients with skin types I, II and III presenting with the same scarring would be effectively treat-

ed with CO<sub>2</sub> laser resurfacing. Despite the advent of newer technologies such as laser hair removal, fractional resurfacing, intense pulsed light and other light based treatments, none of these has offered a true breakthrough for darker skin types. In addition, the post-operative course associated with treating global skin can be very rocky. We have all been in the situation of “chasing” reactive melanocytes with darker skin types.

My most common and predictable treatment modality for global skin involves trichloroacetic acid (TCA). This treatment has been a powerful tool for resurfacing of all skin types for years and has held its ground against many newer technologies. Although fractional and ultra-light laser resurfacing is all the rage, I still feel that most patients can get the same result with TCA.

When resurfacing skin, the very lightest and very darkest skin types seem to offer the least post-resurfacing hyperpigmentation problems in the recovery and post-op phase. It is the intermediate skin types that can cause nervous patients and sleepless nights for the surgeon due to the unpredictable nature of the melanocytes in these patients. The remainder of this article will focus on TCA peeling of darker skin types.

## PRE-PEEL CONSIDERATIONS

In the consultation or pre-peel planning stage, UV photog-



Figure 1. Permanent post injury hyperpigmentation from an African-American with acne scarring (left), an Asian patient with a surgery scar (center) and a Polynesian patient with a burn scar (right). Wounding the skin with chemical peel or laser can induce similar changes over the entire treated area.



Figure 2. This patient was treated for the removal of hundreds of lesion of the face and neck from neurofibromatosis. To blend in the many scars she was subsequently treated with aggressive multipass CO<sub>2</sub> laser skin resurfacing. She is shown pre laser (top left), immediately post laser (top right), two weeks post laser (bottom left) and one month post laser with significant hyperpigmentation (bottom right)

raphy is a useful adjunct to record a baseline and educate the patient as to the amount of their abnormal pigmentation<sup>1</sup>. This will also give the surgeon an idea of the anticipated result. UV-enhancing melanin is more superficial and will respond well to medium depth

peel; deeper dermal melanin and melanin that is not UV enhancing may remain after a single peel. UV photography also gives patients an idea of what will be improved and what may remain. Finally, making a before-and-after UV photograph is an excellent



Figure 4. UV photography is a valuable means of documenting dyspigmentation as well as educating the patient to the problem and providing a means of showing treatment outcome.

Figure 3. This patient sustained trauma from a motor vehicle accident and the scar from the laceration repair was treated with CO<sub>2</sub> laser resurfacing. The patient developed minor hyperpigmentation that responded well to hydroquinone 4%.

means of showing the patient their improvement (Figure 4).

I feel that pre-resurfacing skin preparation is less important for the CO<sub>2</sub> laser resurfacing patient. Most CO<sub>2</sub> resurfacing patients are of lighter skin types, so foregoing pre-resurfacing skin prep with Retin-A and hydroquinone can be acceptable, but I never skip this when peeling global skin. Shortened healing times and faster reepithelialization with pre peel Retin-A has been demonstrated in multiple studies.<sup>2,3,4</sup> It is imperative in these cases to attempt to control the melanocytes, which makes a difference with respect



Figure 5 shows intraoperative photos of patients treated to papillary dermal level with TCA and blue peel base. Figure 5A shows a patient from Africa, 5B shows a patient from Brazil, 5C shows a patient from Thailand and 5D shows a patient from Mexico.

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to limiting and controlling post-inflammatory hyperpigmentation (PIH). Faster re-epithelialization and better acid penetration are additional reasons to pre-treat chemical peel patients.

All peel patients (even light skinned patients) are started on a pre-resurfacing skin care regimen with Retin-A and hydroquinone 4%. The darker the skin, the longer the pre-peel prep, which can range from 4-12 weeks. Patients are seen on a monthly basis; in some cases, pigmentation problems improve significantly with just the creams and they do not need the peel. This is testament to the positive effects of a conscientious skin care program on a compliant patient.

As patients are prepared for medium depth chemical peel they are provided with instructions for the week following the peel. In most cases, medium depth chemical face peel will exfoliate and re-epithelialize in about seven days. Patients are told not to expect significant improve-



Figure 6. When peeling the face, it is common to concomitantly peel the neck or décolleté with a more conservative regimen.



Figure 7. Epidermal sliding is used as an indicator to determine papillary dermal penetration when performing light to medium depth peels. Epidermal sliding is a wrinkling in the skin caused by the penetration of the TCA to the papillary dermis, hence separating the epidermis from the dermis.

ment of lines and wrinkles, although lower eyelid skin wrinkling responds well in terms of skin tightening and wrinkle effacement. Post-peel care is accomplished with petrolatum for the first week and a hypoallergenic moisturizer for the following week. Sunscreen is begun as soon as the skin re-epithelializes and the Retin-A and hydroquinone are started as soon as the patient can tolerate it, usually two to three weeks post-peel. Continuous sun protection and lifetime skin care are discussed numerous times.

Some patients may experience PIH at about 30 days post-peel despite meticulous skin preparation. This possibility is discussed with patients preoperatively so they are not taken by surprise if it should occur. I also explain that the PIH generally improves within two weeks with bleaching creams and Retin-A.

As with any cosmetic surgical procedure, it is important for patients to have a realistic expectation of their anticipated result. Given that this is extremely variable for skin peel patients, I show them numerous before-and-after images of other peel patients so they can have an idea of what to expect. I reinforce the fact that a single peel might not provide them with the result they desire and that further peels may be needed. I encourage patients with more involved pigmentation or scarring to repeat the peel at 90 days.

#### THE PEEL PROCEDURE

All resurfacing patients are placed on an antibiotic and antiviral preoperatively for 24 hours and for the week following the peel. Although many practitioners perform chemical peeling on non-sedated patients, I always use IV sedation



Figure 8. Actual skin exfoliation can be seen between two and five days post peel. The author is shown in the left picture two days after 30% TCA peel and the Fitzpatrick class V patient shown on the right is four days post peel.



Figure 9. This patient was treated with three coats of 20% TCA in blue base. Her forehead scar was treated more aggressively. Note improvements in her pigmentation and scar appearance after a single peel.



Figure 10. This patient is shown after six weeks of aggressive skin pretreatment with Retin-A and hydroquinone and eight weeks after TCA peel with blue base.

for medium depth peels. There is no doubt that a surgeon can do a better job on a cooperative patient. The positive marketing from painless resurfacing cannot be disputed.

When peeling light skinned patients I use plain 30% TCA, but for global skin I prefer blue peel, as I believe it is a little bit more gentle and forgiving than pure TCA. I use Obagi Blue Peel, which has advantages such as a proprietary blue component that promotes even coverage. It also contains glycerin, which slows the penetration of the TCA. By slowing the reaction, end points may be observed easier and the acid does not penetrate deeper than intended by applying too much volume.

On the day of the surgery, the patient is photographed and the mandibular border is marked unless the neck will be simultaneously peeled. I have peeled darker skin with multiple coats of 20% TCA only, but on global skin, I might use TCA in combination with blue peel. I use four coats of 15% TCA or two or three coats of 20% TCA mixed with the blue peel (Figure 5). I generally peel the neck much more conservatively because of the disparity of pilosebaceous units and use several coats of 15% (Figure 6).

The end point for my lighter peel is a white frost with a pink background for the papillary dermis and a solid white frost for an upper reticular dermal peel. It may be more difficult

to assess the pink color of the frost on dark skin or skin treated with the blue peel.

In addition, evaluation of “epidermal sliding” can be a useful tool to determine when the papillary dermal level has been reached. Epidermal sliding, which is a temporary sign that can often be missed you do not look for it, is the ability to wrinkle the skin with a slight push when the TCA has reached the level of the papillary dermis. This occurs because the TCA has separated the epidermis from the dermis (Figure 7), and it shows up when you start to enter the papillary dermis. With continued application, however, the peel penetrates the entire papillary dermis and you lose the sign.

I generally peel the lower lids aggressively because most adult patients have some component of dermatochalasis. Upper lids receive a much lighter treatment. For areas of deeper acne scars I will use the end of cotton tipped applicator to “grind” the acid into the depressed scar.

**In most cases, medium depth chemical face peel will exfoliate and re-epithelialize in about seven days. Post-operatively, the skin will begin to peel first at the areas of increased movement, such as the perioral, periorbital, and nasolabial regions.**

Post-operatively, the skin will begin to peel first at the areas of increased movement, such as the perioral, periorbital, and nasolabial regions. Figure 8 shows the author (left) 48 hours after a 30% TCA peel while the Fitzpatrick V and an African-American patient four days following treatment with three coats of 20% TCA with blue peel.

#### COMPLICATIONS

Post-peel complications are consistent with any resurfacing procedures and include scarring, hyper- and hypo pigmentation, bacterial, yeast, and viral infections, under treatment, and over treatment. Novice surgeons should take baby steps when it comes to peeling pigmented skin. Picking the right patients and employing conscientious pre-treatment skin regimens can improve outcomes and reduce complications. It is beneficial to have a mentor guide the novice peeler through the learning curve of chemical skin peeling.

#### CONCLUSION

Even with all the new and innovative technologies that have emerged to rejuvenate skin, including global skin, the simple TCA chemical peel remains



**Figure 10.** This patient is shown after six weeks of aggressive skin pretreatment with Retin-A and hydroquinone and eight weeks after TCA peel with blue base.

a safe, effective, economical, and time tested method that is adaptable to all skin types. It can produce worthy results with reasonable downtime in diverse patient populations.

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