Resurfacing Pigmented Skin: The Art of the Peel

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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 practitio

ner. 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 CO₂ 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 most predictable treatment modalities. Most CO₂ 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. It is imperative in these cases to attempt to control the melanocytes, which makes a difference with respect to the art of the peel.

PRE-PEEL CONSIDERATIONS

In the consultation or pre-peel planning stage, UV photography is a useful adjunct to record a baseline and educate the patient as to the amount of their abnormal pigmentation. 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 means of showing the patient their improvement (Figure 4).

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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 lesions of the face and neck from neurofibromatosis. To blend in the many scars she was subsequently treated with aggressive multipass CO₂ 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 hypopigmentation (bottom right).

Figure 3. This patient sustained trauma from a motor vehicle accident and the scar from the laceration repair was treated with CO₂ laser resurfacing. The patient developed minor hyperpigmentation that responded well to hydroquinone 4%.

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.
expect significant improvement within two to three weeks post-peel. Continuous sun protection and lifelong 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 procedures 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 to limit 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-
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.

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 hypopigmentation, 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 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.

REFERENCES

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