

# Treatment of Dyschromia

Dyschromia can be distressing to patients and difficult to treat, whether it is related to skin-resurfacing procedures, surgery, hormonal changes, environmental exposure, or genetic predisposition. Stephen Mulholland, MD; Michael Kulick, MD; and Brooke R. Seckel, MD, address some frequently asked treatment questions posed by "Comparing Notes" editor Alan H. Gold, MD.

*Lower-eyelid and infraorbital hyperpigmentation is a common and troublesome problem. What is your preferred treatment for hyperpigmentation in these areas, and does treatment differ if the problem is familial, allergic, or postsurgical in origin?*

**Stephen Mulholland, MD, Toronto, Canada:**

Dyschromia is a melanin-based pigmentation disorder that may be congenital (usually in Fitzpatrick skin types 4 and 5) or acquired after surgery or skin treatment. It may also follow an inflammatory episode or be allergic, hormonal, or solar in origin. Each type may be treated differently.

For acquired dyschromia, the patient's skin type is most important, because the condition may be easily exacerbated in darker skin. Hormonally mediated dyschromia, such as superficial and deep melasma or chloasma, also can be worsened if the treating physician is not careful.

Treatment may include the following: topical chemomelanin suppression with 4% to 8% hydroquinone or 2% to 4% kojic acid; stimulation of keratinocyte and basal-cell turnover with topical retinoic acid, 0.05% to 0.1% ; microabrasive keratolytic therapy with crystal or ultrasound technology; chemical keratolytic therapy with trichloroacetic acid (TCA), glycolic acid, salicylic acid, alpha-hydroxyl acids, and so on; antiinflammatory agents such as 0.5% hydrocortisone; photon therapy with moderate aggression and gradual removal through the use of intense pulsed light (IPL), IPL/radiofrequency (RF) systems or FotoFacial treatments; or more aggressive and rapid removal with a Q-switched laser system (532, ruby, alexandrite, and YAG).

Lower-lid dyschromia and hyperpigmentation, the congenital type most often seen in Fitzpatrick skin types 4 and 5, is usually deep-dermal and unresponsive to topical therapies or mild photon therapy (IPL or IPL/RF). Q-switched photon therapy is too aggressive and often results in hypopigmentation. I use a trial of topical therapies that usually fail and tell the patient there is nothing we can offer that is safe and effective. However, posttraumatic hyperpigmentation following surgery or resurfacing in any skin type is quite amenable to treatment. For skin types 1 through 3, I offer the following protocols:

1. Topical chemomelanin suppression and increased cell turnover: Retin-A twice daily; 4% hydroquinone 3 times daily; 4% kojic acid 3 times daily; 0.5% to 1% hydrocortisone cream; or a mixture of hydrocortisone, retinoid, and hydroquinone for milder cases.
2. Weekly microdermabrasion.
3. IPL or IPL/RF treatment, every 3 weeks for 15 weeks (5 treatments). The patient continues protocols 1 and 2 as well. With this protocol, all patients respond, and complete resolution is seen in 90% of patients.

For skin types 4 and 5, I offer the same protocol, but patients must be pretreated with protocols 1 and 2 for 6 to 8 weeks. I frequently use a formal Obagi regimen (Skin-Care MD, Manchester, NH) and weekly microdermabrasion for 8 weeks before instituting protocol 3.

Treatment of melasma or chloasma of the cheeks and malar complex is very tricky. Aggressive IPL or chemical techniques often make the condition much worse. I use the same protocols described above, but pretreatment is critical.

**Michael I. Kulick, MD, San Francisco, CA:** The visible darkening of the lower-eyelid region is caused by intrinsic skin color, the shadow effect caused by light from above, and transillumination of light off the darker underlying muscle in thin-skinned individuals. Patients may have more than 1 cause of dark circles. I first educate patients about why they have this condition and then outline treatment alternatives. To remedy the shadow effect, I recommend surgery. For intrinsic skin pigment, I offer IPL treatments, with or without supplemental topical agents, and chemical or laser ablation techniques. For thin-skinned people, I suggest placing an interposition graft of dermis or fascia.

**Brooke R. Seckel, MD, Lexington, MA:** Minor degrees of lower eyelid and infraorbital hyperpigmentation are very easy to treat with a combination of a skin bleach such as hydroquinone and a series of 6 microdermabrasions. Darker spots within the hyperpigmented field can be satisfactorily treated with a Versapulse laser (Coherent Inc, Santa Clara, CA).

Moderate-to-severe hyperpigmentation also responds to this regimen. I typically prescribe skin bleach and a series of 6 microdermabrasions; after 3 or 4 months, residual areas can be treated with the Versapulse laser.

In some patients with significant hyperpigmentation, a superficial 20- to 60- $\mu$ m-depth erbium-laser peel is necessary. However, these patients tend to demonstrate hyperpigmentation after the laser treatment. But if you begin with a fresh skin wound and aggressively administer skin bleach mixed with 1% hydrocortisone cream, then perform microdermabrasion, postsurgical hyperpigmentation can be prevented in these patients.

*How do you treat postinflammatory hyperpigmentation after a resurfacing procedure or injury to other areas?*

**Dr. Mulholland:** I would not resurface Fitzpatrick skin types of 3 or higher, but I would use the protocols I have already outlined.

**Dr. Kulick:** First I address such issues as patient expectation and the origin and duration of the problem. Once the need for treatment is established and the patient's expectations are realistic, I work from the least to the most invasive treatment options. Therefore I start with topical bleaching agents such as kojic acid or hydroquinone, then offer topical TCA or IPL treatment. TCA is less expensive but only deals with hyperpigmentation and texture. With IPL, redness is improved in addition to undesirable hyperpigmentation and texture. On rare occasions, I offer more aggressive ablative techniques, such as the erbium or CO<sub>2</sub> laser.

**Dr. Seckel:** The availability of microdermabrasion coupled with topical medications has eliminated postinflammatory hyperpigmentation after laser resurfacing as a significant morbidity in my practice.

In some patients, the onset of postinflammatory hyperpigmentation may be seen by the third week after laser resurfacing. I treat these patients aggressively with 1% hydrocortisone or, in patients whose skin is very irritated, Temovate cream (Elan Pharmaceuticals, New York, NY) mixed with Claripel, (Stiefel Laboratories, (UK) Ltd,

London) or hydroquinone. By the sixth week, I attempt to have all patients using Retin-A and following the microdermabrasion regimen. In my experience, instituting Retin-A and microdermabrasion by the sixth week minimizes postinflammatory hyperpigmentation in vulnerable patients and improves resolution of erythema after resurfacing.

*Patients frequently request removal of single or multiple lentigines. What is your approach to lentigines, and does it differ for various areas such as the face, chest, and hands?*

**Dr. Mulholland:** The only time I will now remove (by means of surgery or laser) a single lentigo or multiple lentigines is if a patient has very light Fitzpatrick type 1 or 2 skin with no collateral dyschromia evident in the lesion area. Most chemical, surgical, and photon- or laser-based removal techniques for pigmented lesions leave characteristic signs of removal, namely hypopigmentation, atrophic skin, or a scar. The more dyschromic the skin, the more noticeable this aesthetically displeasing result.

To avoid demarcations in texture, color, and tone, I prefer to treat whole regions with IPL in a classic FotoFacial approach. In addition to improvement in the lentigines or dyschromia, the patient gets the added benefits of improvement in pore size, fine wrinkles, texture, telangectasia, and dermal thickness. The full FotoFacial program is 5 FotoFacial treatments of the region with the use of IPL or IPL/RF, performed every 3 weeks, in a 15-week program. All patients use skin-care products (Retin-A, 4% hydroquinone, and 4% kojic acid, as described earlier) and undergo 4 intercurrent microdermabrasion treatments to remove superficial desquamating melanin and thin the stratum corneum for improved penetration of skin-care products and IPL.

**Dr. Kulick:** For discrete areas, chemical ablation works well. For multiple areas, I prefer to use the laser to burn off these lesions. In all patients, I use a topical steroid for a few days, then topical bleaching cream until healing occurs. As always, sunscreen is a must.

**Dr. Seckel:** If a solar lentigo is flat and has no exophytic component, the Versapulse laser is a very satisfactory treatment. If the pigmented area is, in fact, a seborrheic keratosis in evolution or a raised lentigo, the lesion may be treated satisfactorily by means of shaving or planing with a scalpel; liquid nitrogen; or the CO<sub>2</sub> or erbium laser.

My preference for raised, multiple facial lentigines is to shave the lesion to obtain a pathology specimen, fol-

lowed by erbium-laser treatment of the base and surrounding skin to encourage uniform reepithelialization and minimize scarring.

*How do you treat multiple flat, superficial melanocytic nevi? Is there a role for ablation rather than excision? How about café-au-lait lesions?*

**Dr. Mulholland:** To avoid noticeable and aesthetically displeasing local hypopigmentation and texture demarcation, never perform spot treatments for dyschromia or photoaging. Treat an entire anatomic subunit or region.

**Dr. Kulick:** For flat superficial melanocytic nevi, I always recommend excision because of the potential for malignancy. For café-au-lait lesions, a topical bleaching cream followed by laser treatment works best.

**Dr. Seckel:** Multiple flat, superficial melanocytic nevi may be very satisfactorily ablated with a laser, either the CO<sub>2</sub> or the erbium, as long as there is no suspicion of melanoma (in which case excisional biopsy is indicated). In my practice, café-au-lait lesions are treated with the Versapulse laser.

*Areas of hypopigmentation can often be almost as troublesome as hyperpigmentation. Have you had success in treating such areas that may have resulted from resurfacing procedures? How about after other trauma? What about scars or stretch marks?*

**Dr. Mulholland:** For lower eyelid, perioral, or facial/cervical demarcation due to hypopigmentation after resurfacing, I have had some success with a FotoFacial or FotoBody IPL program in the area surrounding the regional hypopigmentation. The 15-week FotoFacial treatment in conjunction with chemical and microdermabrasion treatments, as outlined, will fade any melanin or hemoglobin chromophores that accentuate the hypopigmentation. The hypopigmentation will therefore appear less noticeable because the demarcation line is less pronounced.

The new excimer systems, such as ReLume (Lumenis, Santa Clara, CA) have been helpful in restoring some pigment to resurfaced areas, face lift and blepharoplasty scars, and hypopigmented stretch marks. For face lift or blepharoplasty scars that are resistant to those treatments, I would suggest cosmetic tattooing.

**Dr. Kulick:** I have been unimpressed with all scar treatments other than excision, assuming that the resulting scar will not be more of a deformity. For other hypopig-

mentation, I have been using a newer technology, ReLume, which is a pulsed-light nanometers (IPL) device. The wavelength extends from 280 to 320 and therefore contains both UVA and UVB energy. The patient undergoes a series of brief, painless treatments. Both the patients and I have been happy with the results. Follow-up sessions are necessary. All types of hypopigmented areas respond in varying degrees. Superficial second-degree injuries respond best (the more superficial, the better the repigmentation), stretch marks less favorably, and full-thickness injuries least favorably.

**Dr. Seckel:** Hypopigmentation remains a recalcitrant problem. Obviously prevention is the best cure. Demarcation lines are difficult to treat beneath the mandible. In all honesty, most patients must accept that they will have to use makeup to cover these areas.

Medical tattooing can be used on small areas with satisfactory results. The manufacturers of some new lasers on the market claim that their products solve this problem, but I have not seen this demonstrated.

*What about vitiligo? Is there an effective technique, for lightening overall skin pigmentation that extends beyond evening out pigmentation?*

**Dr. Kulick:** The ReLume device has been used for vitiligo. It is a little more work in that the surrounding hyperpigmentation areas must be treated with topical bleaching creams or IPL energy to reduce the pigment; the hypopigmented central area is treated with ReLume. I have had more experience treating limited hypopigmentation than true vitiligo.

**Dr. Seckel:** Localized areas of vitiligo can be adequately treated with medical tattooing. The difficulty with treating vitiligo by lightening surrounding skin with available laser techniques is that there is an increased risk of severe hypopigmentation in patients who are prone to vitiligo. Certainly a combination of skin bleaching and microdermabrasion is a very satisfactory method for attempting to solve this difficult problem.

Reprint requests: Alan H. Gold, MD, 833 Northern Blvd, Suite 240, Great Neck, NY 11021.

Copyright © 2003 by The American Society for Aesthetic Plastic Surgery, Inc.  
1090-820X/2003/\$30.00 + 0  
doi:10.1067/maj.2003.64