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REEPOT

Beyond Melanin Removal: Treating the Skin Environment



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Recent trends in pigment treatment within aesthetic medicine have shown a clear shift. Whereas treatment in the past primarily focused on the rapid removal of specific pigmented lesions, current strategies place greater emphasis on minimizing post-treatment recurrence and post-inflammatory hyperpigmentation (PIH), shortening recovery time, and improving long term skin condition. This trend is particularly evident in Asian populations, in which Fitzpatrick skin types III and above predominate.

In actual clinical practice, lesions commonly categorized as "facial pigmentation" are often not attributable to a single condition. Solar lentigines, freckles, superficial seborrheic keratoses, PIH, and even early stage nevus of Ota-like macules may coexist in the same patient. These lesions differ in their depth of involvement, patterns of melanin distribution, and associated structural changes in the epidermis and dermis. Therefore, an approach that targets melanin alone has clear limitations.

Particularly in photoaged skin, reduced epidermal turnover, basement membrane damage, chronic low grade inflammation within the dermis, and vascular changes create an environment in which pigmentation develops more readily and is more likely to persist or recur after treatment. For this reason, in the treatment of aging related pigmentary disorders, it is important to focus not only on destroying melanin itself, but also on understanding and modulating the "skin environment" that promotes the formation and persistence of pigmentation.

VSLS Technique: A Structural Approach to Age-Related Pigmentation

REEPOT's VSLS(Vasculature Salvage Laser Surgery) technique represents an important treatment strategy. Rather than functioning simply as a pigment laser using a 532 nm wavelength, VSLS is distinguished from conventional single wavelength pigment lasers by its integrated irradiation approach combining hyper cooling, tissue compression, and selective photoreaction. In REEPOT's VSLS technique, hyper cooling rapidly lower the surface temperature of the epidermis immediately before and during laser irradiation, thereby limiting excessive thermal injury to the melanin rich epidermal layer. This allows more selective delivery of energy to the target pigmented lesion while reducing the risk of epidermal burns and PIH, even when relatively high energy settings are used. At the same time, compression applied during irradiation temporarily reduces blood flow within the lesion and decreases optical scattering, allowing the laser energy to be delivered more directly to the target tissue.

These mechanisms play a key role in minimizing thermal damage to the surrounding normal epidermis during VSLS treatment and are particularly important for reducing the risk of PIH, a major clinical concern in Asian skin.

Advantages in Solar Lentigines and Complex Pigmentary Lesions

Solar lentigines, one of the primary targets of REEPOT, are a representative form of age related pigmentation. However, pigmentary disorders associated with aging cannot be regarded as a problem of melanin alone. In photoaged skin, dermal collagen degeneration, loss of elasticity, microvascular dilation, and chronic low grade inflammation often coexist. These changes can increase melanocyte activity and the likelihood of pigment recurrence while also amplifying the risk of PIH during treatment. In this context, REEPOT's VSLS technique may provide a useful approach to overcoming some of these limitations. These challenges become even more pronounced in complex pigmentary lesions accompanied by melasoma or nevus of Ota-like macules. Melasma is characterized by the combined effects of functional melanocyte hyperactivity, vascular factors, and a pro-inflammatory dermal environment, whereas nevus of Ota-like macules involve structurally persistent melanocytes or melanin within the dermis. In such cases, concomitant solar lentigines may pose a therapeutic dilemma: higher energy treatment may increase the risk of PIH, whereas lower energy treatment may result in incomplete lesion clearance.

REEPOT's VSLS technique combines hyper cooling and compression to suppress excessive epidermal heating while selectively delivering energy to the target lesion. This offers the advantage of inducing a therapeutic response in dermal pigmentation while minimizing stimulation of epidermal melanocytes. The 532 nm wavelength is absorbed not only by superficial melanin but also by vascular chromophores, which may help address vascular and inflammatory components associated with melasma.

In addition, the irradiation conditions provided by the VSLS technique create a favorable clinical setting for achieving clearance of solar lentigines in a single treatment session. Based on clinical experience, compared with other high-energy pigment laser treatments, REEPOT treatment tended to result in a shorter duration of post-treatment erythema and



Clinical case of solar lentigo treatment using the VSLS technique. Courtesy of Dr. Hyun-Hwa Kim.

inflammatory reactions, as well as a shorter recovery period before patients could return to their normal daily activities.

Combination Treatment as a 'Sequential', Rather Than 'Parallel' Strategy

As described above, in complex pigmentary cases, VSLS based REEPOT treatment is used as the core therapy, with adjunctive treatments incorporated to improve the underlying skin environment. Needle RF creates focal thermal coagulation zones within the dermis, promoting collagen remodeling and helping to alleviate chronic inflammatory conditions, thereby interrupting the cycle of dermal changes that may contribute to recurrent pigmentation. Q-switched Nd:YAG laser treatment is used as an adjunct to address diffusely distributed superficial pigmentation and overall uneven skin tone.

Ultimately, the treatment of age-related pigmentation should not be viewed as the parallel use of multiple devices. Rather, it represents a sequential strategy in which structurally defined pigmented lesions are first addressed with REEPOT using the VSLS technique, followed by the use of other energy-based devices to remodel and improve the underlying skin environment.

Clinical Relevance in the Asian Market

The author has shared this VSLS based pigment treatment strategy through various academic lectures both in Korea and abroad. Clinicians across Asian countries, who often encounter patients with similar genetic and dermatologic background, naturally have a high level of concern regarding the risk of PIH in pigment treatment. This strong interest has been consistently reflected in discussions and Q&A



Dr. Hyun-Hwa Kim performing a REEPOT treatment. Courtesy of Dr. Hyun-Hwa Kim.

sessions following these lectures.

At the 2025 REEPOT Master Class hosted by CLASSYS headquarters, clinicians from Taiwan, Korea, Japan, Singapore, and other Asian countries participated in focused discussions and Q&A on the clinical rationale for VSLS based treatment planning, stepwise energy adjustment, and the combined use of hyper-cooling and tissue compression to suppress inflammation while safely targeting dermal lesions. This reflected growing recognition of REEPOT not merely as a pigment removal device, but as a clinical strategy for managing photoaging and complex pigmentary lesions with shorter recovery times and fewer treatment sessions.

In summary, REEPOT's VSLS technique may help overcome some limitations of conventional pigment lasers by improving lesion selectivity while minimizing PIH risk, particularly in patients with Fitzpatrick skin type III or higher and in Asian populations where solar lentigines and age related pigmentation are common.