



**NEW HORIZONS FOR
SUN DAMAGE TREATMENT:
EXCITING ADVANCES FOR PATIENTS**

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No matter how vigilant you are, and no matter how much sunscreen you use, you cannot avoid UV exposure entirely. It's no surprise, then, that sun damage is among the most common conditions that medical aesthetics professionals encounter.

Fortunately, practitioners have many tools to address the unsightly consequences of sun damage. We can achieve significant improvements in appearance, self-esteem, and quality of life for patients—sun damage treatments offer practitioners abundant opportunities to ride the wave of high patient demand and high patient satisfaction.

This report covers the top options and latest advances in treating skin damage from UV exposure (also known as photodamage). It explains the successes and comparative advantages of leading treatments, and outlines innovations in treatment and knowledge that you can use to raise the bar in patient satisfaction and practice profitability.



SUN DAMAGE: CAUSES AND PRESENTATION

Over a lifetime, sun damage can be difficult to avoid. There are a number of reasons why sun damage is incredibly common, ranging from incidental UV exposure, to active lifestyles involving outdoor sports and physical pursuits, to the decades-long phenomenon of increased UV radiation reaching the earth's surface as a result of environmental degradation.

Sun damage is among the most frequent reasons patients visit aesthetics practitioners. This concern is particularly heightened among those who accumulated sun exposure without adequate protection before the full consequences of excessive UV radiation were known.

With sun damage, UV light radiation increases production of free radicals in the skin. This causes damage to DNA, as well as inflammation of the collagen and other proteins that provide elasticity and tone to skin.

Excessive sun exposure leads to the appearance of premature aging in the form of lines, wrinkles, brown or red spots, broken capillaries, and leathery, dry, and/or rough skin. Some people may even develop pre-cancerous lesions or melanoma.

Fortunately, there are many treatments available for sun damage. Let's take a look at some of the most popular options, and the latest advances in the field.

THE LATEST
ADVANCES
IN THE FIELD

TREATMENT OPTIONS FOR SUN DAMAGE:

New avenues of treatment are opening for patients with sun damage.

FAT TRANSFER

Among the treatments gaining greater clinical validation is facial fat transfer, or fat grafting. This entails taking fat cells from one part of the patient's body and injecting them at the treatment site. This technique is becoming more frequently used for volume restoration and jawline tuck procedures.

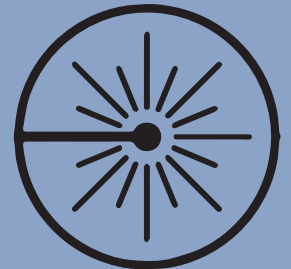
One 2017 study assessed the efficacy of facial fat transfer in 21 patients who suffered from facial photoaging. The study found that patients experienced a 41 percent reduction in average wrinkle depth, and improved texture and tone, while more than 90 percent of patients reported improved self-perception.¹



LASER

Laser treatments have been in use for nearly three decades, though they have undergone recent advances in their potential to improve photodamage.

In a 2017 study performed on 34 patients in England, Erbium:YAG laser combined with Spatially Modulated Ablation (SMA) was found to achieve significant improvement in facial skin elasticity, wrinkle reduction, and rejuvenation.² Patients felt they looked younger by an average of 4.13 years at six months post-treatment, and no adverse reactions were reported. Recovery time was minimal, compared to conventional lasers, such as carbon dioxide. An uncontrolled Russian study of the technique on 100 female subjects, published in February 2017, also found significant improvements.³



1 Trivisonna A, Rossi A, Monti M, Di Nunno D, Desouches C, Cannistra C, et al. Facial skin rejuvenation by autologous dermal microfat transfer in photoaged patients: Clinical evaluation and skin surface digital profilometry analysis. *J. Plast. Reconstr. Aesthet. Surg.* 2017 Aug; 70(8): p. 1118-1128.

2 Hersant B, SidAhmed-Mezi M, Chossat A, Meningaud J. Multifractional microablative laser combined with spacially modulated ablative (SMA) technology for facial skin rejuvenation. *Lasers Surg. Med.* 2017 Jan; 49(1): p. 78-83.

3 Volkova N, Glazkova L, Khomchenko V, Sadick N. Novel method for facial rejuvenation using Er:YAG laser equipped with a spatially modulated ablation module: An open prospective uncontrolled cohort study. *J. Cosmet. Laser Ther.* 2017 Feb; 19(1): p. 25-29.

THE LATEST ADVANCES IN THE FIELD

IPL

Intense pulsed light (IPL) therapy is also proven to be effective and non-invasive for treating sun damage. IPL is similar to laser therapy in that it uses light energy to target skin cells. The difference comes down to wavelengths—while laser uses a single wavelength and often only targets the surface layers of skin, IPL uses multiple wavelengths and is capable of treating deeper layers of skin. IPL can also treat discoloration and spots, making it one of the best options available for sun damage treatment.⁴

Chief among the advantages of IPL treatment, it is proven to be highly effective and quick-performing. The treatment non-invasively targets multiple layers of skin, and because IPL therapy is done over the course of multiple sessions, it can be easily tailored based on the severity of the sun damage and the skin's response to treatment.



MICRONEEDLING

Microneedling uses miniature needles to produce controlled skin injuries without actually harming the epidermis. Growth factors are released as the skin heals. When it comes to sun damage, one advantage of microneedling is that it can be used with dark skin types, which are often at risk for post-inflammatory hyperpigmentation with other techniques.

Also known as collagen induction therapy, microneedling is primarily used in skin rejuvenation. The approach is now also used for a variety of treatments, including actinic keratosis in sun-damaged skin, acne scars, drug delivery, stretch marks, and more.

Though microneedling is a longstanding aesthetic approach, it has experienced some recent advancements in regards to techniques and instruments.⁵ However, unlike other options—including fat transfer and IPL—data is not readily available to support the efficacy of microneedling in the treatment of sun damage in particular.



4 Ngan V. DermNet New Zealand. [Online].; 2005 [cited 2017 Jul 24. Available from: <https://www.dermnetnz.org/topics/intense-pulsed-light-therapy/>.

5 Singh A, Yadav S. Microneedling: Advances and widening horizons. Indian Dermatol. Online J. 2016 Jul-Aug; 7(4): p. 244-254.

FUTURE HORIZONS:

NEW RESEARCH, NOVEL SUBSTANCES

SULFORAPHANE

Research is moving swiftly on a variety of novel substances that hold potential for preventing or treating sun damage. Among them is sulforaphane, a natural compound that occurs in cruciferous vegetables. Previously investigated as an antioxidant and anti-aging agent, it is now being researched as a protective agent against UV damage.⁶

Researchers expect sulforaphane to become a promising ingredient for drugs and cosmetics targeting anti-aging and dark spot reduction.⁷



PTEROSTILBENE

Pterostilbene is another agent currently under study. Pterostilbene is an antioxidant, found in sources like blueberries, that is chemically similar to resveratrol. Several studies, including a Chinese study published in 2017, have found that it effectively protects against UVB-induced photodamage.⁸ This represents an advantage over resveratrol, which has not been found to have benefits against sun-related skin damage. Supplements containing this ingredient are already on the market, and topicals are being investigated.



ASTAXANTHIN

Lastly, a combination of extracts from soybean and marine plants that contain the natural carotenoid pigment astaxanthin is under study for its potential ability to prevent UVB-induced photoaging. In a recent lab study, it was found to inhibit wrinkle formation.⁹ The results highlight the potential for this combination to be developed as a therapeutic agent to prevent skin wrinkling caused by ultraviolet rays.



6 Sikdar S, Papadopoulou M, Dubois J. What do we know about sulforaphane protection against photoaging? *J. Cosmet. Dermatol.* 2016 Mar; 15(1): p. 72-77.

7 Chaiprasongsuk A, Lohakul J, Soontrapa K, Sampattavanich S, Akarasereenont P, Panich U. Activation of Nrf2 Reduces UVA-Mediated MMP-1 Upregulation via MAPK/AP-1 Signaling Cascades: The Photoprotective Effects of Sulforaphane and Hispidulin. *J. Pharmacol. Exp. Ther.* 2017 Mar; 360(3): p. 388-398.

8 Li H, Jiang N, Liang B, Liu Q, Zhang E, Peng L, et al. Pterostilbene protects against UVB-induced photo-damage through a phosphatidylinositol-3-kinase-dependent Nrf2/ARE pathway in human keratinocytes. *Redox Rep.* 2017 May; 0(0): p. 1-7.

9 Shin J, Kim J, Pak K, Kang J, Kim T, Lee S, et al. A Combination of Soybean and Haematococcus Extract Alleviates Ultraviolet B-Induced Photoaging. *Int. J. Mol. Sci.* 2017 Mar; 18(3): p. 682.

CONCLUSION:

As we have seen, a number of effective treatments for photodamage are available today, and practitioners can look forward to a promising pipeline of intriguing research options.

Patients should be encouraged to take advantage of these trends, and to take steps towards treatments that help them overcome sun damage and enjoy younger, healthier-looking skin.

Venus Concept is a leader in versatile energy-based aesthetic devices that offer high efficacy, a strong ROI, and unparalleled support. Our practice enhancement specialists are available to advise you on positioning your clinic to take advantage of the latest treatment trends.



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