

Laser- & IPL treatments – the appropriate skin care

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The use of lasers in the cosmetic and dermatological treatment has become increasingly popular in recent years. Experience has shown that preparative steps before the treatment and an adequate follow-up care are of vital importance in order to achieve optimal results.

Therapy-accompanying skin care can preventively minimize the annoying side effects and abbreviate the consequences in connection with specific treatments. In this context several criteria play a vital role which is discussed in the following.

Laser devices used for the treatment of skin anomalies and age-specific modifications mainly concentrate on destroying tissue parts in extremely small skin areas. The idea is to spare neighboring skin areas and to limit the thermal stress to the targeted tissue. For this purpose laser devices are used with wave lengths that correspond with the targeted tissue areas. As an example may be stated that hyper pigmentations like age spots or freckles are removed with devices that have an absorbing spectrum which is adapted to the melanin of the skin. The melanin containing tissue parts are then specifically heated and destroyed while the surrounding area with lesser melanin is largely spared. Recent devices are additionally equipped with a cooling gadget.

Laser applications

The following indications are in the foreground:

- Hemangioma,
- spider veins,
- epilation,
- fibroma,
- hyper pigmentations – age spots and freckles,
- scars including acne scars, striae and port-wine stains,
- permanent make up,
- tattoos,
- teleangiectasia – extended capillary vessels as e.g. with couperosis,
- cornification disorders as well as
- warts.

Beyond that, specific laser devices equipped to remove the superficial skin layers are used as an alternative to chemical peelings. Basic idea of these procedures mainly is to renew the skin and to smoothen wrinkles.

Side effects

Side effects have to be expected with all kinds of laser treatments and depending on the specific instruments used they can vary a lot. Most frequent are **erythemas** which develop right after the treatment. Subsequently occurring **infections** and **inflammations** may retard the healing process.

Due to the punctate or two-dimensional barrier disorders caused by the procedure, the skin dehydrates in these areas and the missing melanin is the reason for an increased sensitivity to radiation. The result will be an **increased hyper pigmentation** if the skin is not effectively protected against sun radiation. Furthermore, it is significant to impede the formation of scars. In this context, it is important to know when to start with the cosmetic care and which specific products can be used (see below). Main criteria for the accompanying care are therefore skin calming, skin protection and the recovery of the skin.

If scars start to develop, then also **hypo pigmentation** (brighter, up to even white skin areas) has to be considered apart from the hyper pigmentation. Intermediately **crusts** or **flaky skin** may develop, however this will be a temporary phenomenon. As long as the skin generates a weeping discharge, the cosmetic treatment should be limited to low-fat active agent concentrates. As soon as the skin surface is dry creams or make ups can be used. Before the laser treatment, cosmetic products with photosensitizing components like e.g. tea tree oil, bergamot oil, St. John's wort extract and retinoids (vitamin A, vitamin A acid) have to be strictly avoided (cf. BEAUTY FORUM 2008 (9), 114-116). Also the application of self tanning products which are frequently used to minimize contrasts in the case of already existing hyper pigmentations has to be stopped in time as these products may absorb laser light.

IPL systems

The term laser is an abbreviation of **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation. Lasers emit only one specific wave length in

form of coherent monochromatic light in high intensity. This is the reason why the adequate wave length for the specific indication has to be selected. Things are different with IPL systems. IPL means **I**ntense **P**ulsed **L**ight. In this case the whole spectrum of a light source is used and, if necessary, an effective scope of light then extracted with specific filters. The light is pulsed i.e. it emits highly energetic light flashes which are mainly used for epilation purposes. Similar to laser applications the device is appropriately equipped to cool down the heat built up in the process.

Under certain conditions IPL may improve the skin structure as e.g. if appropriate active agent concentrates are applied immediately before the treatment. In case of two-dimensional IPL treatments specific active agents are used that can be selectively activated by thermal energy. On the other hand the permeability of the tissue for active agents will be temporarily increased. Anti-inflammatory and smoothing components are most appropriate for this purpose. If they are simultaneously integrated into the matrix of a hyaluronic acid gel the superficial effects of the hyaluronic acid will add up with the result of excellent smoothing effects. Boswellia acids will inhibit inflammations and at the same time also the collagen degrading metallo-proteinases.

Before the treatment

Precondition for a scheduled laser peeling is the adequate regenerative capacity of the skin which cannot be taken for granted though. That is the reason why a strengthening skin care therapy should be carried out over a period of several weeks before the treatment which is also recommended for other peeling procedures. Products with a high content of **phosphatidylcholine** (PC) are most appropriate for this purpose. It should be kept in mind however that although the INCI term of PC is lecithin, it is not guaranteed that pure PC is contained. PC lotions are recommended for all laser treatments. Due to the fact that PC is the base substance for liposomes or fluid nanoparticles, it is quite easy to use them for the transport of small doses of **vitamin C derivatives** into the skin before the treatment. There they are enzymatically hydrolyzed, release vitamin C and effectively impede radiation-induced hyper pigmentation. The same effect is achieved with liposomally encapsulated **tyrosinase inhibitors** on a vegetable basis. A practical side effect of vitamin C is that it stimulates the collagen synthesis which is important for the recovery of the skin. In this context it is also recommended to scrutinize the different products. Pure vitamin C solu-

tions, even highly concentrated ones, are not suitable for laser applications. On the contrary, they tend to cause irritations and brown stains. It goes without saying that all skin care products with counterproductive effects on the skin recovery should be discontinued long before the scheduled laser treatment. Above all, intensely fattening and occlusive products belong to this category. By contrast, products which support the natural moisturizing factor of the skin (NMF) in form of amino acids should be preferred. Read more about amino acids in the magazine KOSMETISCHE PRAXIS 2009 (3), 15-17.

After the treatment

After the treatment it is recommended to continue with the same products that were used before the treatment. They can of course be complemented with recovery-supporting vitamins like **vitamin A**. These products will be a substantial help to prevent scar formation. As far as intense erythema or even open skin sores or weeping areas develop, it is indicated to primarily refer to medicated antiseptics in order to prevent bacterial infections. Only then it is possible to start with **cosmetic lotions with active agents**. Later on, after the weeping areas have dried out **fat-containing products** may be applied. In this case it is recommended to use products with a **high SPF** as the weak or even missing skin barrier areas will not provide any protection against radiation. It should also be mentioned in this context that the hyper pigmentations that have just been treated may appear again. Depending on the specific laser treatment it is recommended to avoid sun exposure as well as tanning salons for several months even.

In isolated cases erythema may even last for several weeks. The lotions that are recommended for reddened skin contain the agents **D-panthenol** and **linolenic acid** in its alpha-(omega-3 acid) as well as its gamma isomer (omega-6 acid). Mucigenous ingredients based on polysaccharides (**hyaluronic acid, aloe vera, alginate, xanthan**) may be an adequate remedy here as they prevent the frequently observed dry skin after laser treatments due to the flexible film they form on the skin surface. Gels on this basis additionally have a cooling effect and also largely eliminate itching. As far as severe itching is concerned low dosages of urea and urea-containing powders have proved successful.

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