

Plasma Technology for skin regeneration

Author: Dr. Medic IMF Bukarest Adrian Roye

While aesthetic skin regeneration is registering increased interest, the trend is moving more toward minimally invasive treatment methods. Safe and less burdensome methods are especially in growing demand. Following in this trend is a new technology based upon creating and using physical plasma, which is opening up very promising treatment methods.



With PlexR[®], an instrument is available that allows for minimally invasive and effective treatment against the effects of aging on the skin. The underlying key principle is the use of physical plasma, which is created directly on-site. The phenomenon of the dielectric barrier discharge ionizes surrounding atmospheric gases, which mainly consist of nitrogen and oxygen. The difference in potential between the instrument and the skin will thus create the plasma arc, without the skin having to be touched. The PlexR[®] plasma consists primarily of reactive nitrogen species (RNS) and reactive oxygen species (ROS), which affect the skin in two different ways:

Firstly, a micro-ablation occurs. The skin is vaporized through sublimation, without causing thermal damage to the underlying tissue.

Secondly, there is the intrinsic effect

of the plasma, induced through RNS and ROS. Among its consequences are an accelerated and physiological wound-healing, physical topical anaesthesia, and a firming of the skin. Among other things, plasma additionally acts bactericidal and fungicidal, which further assists in the fast and scar-free healing process. The range of applications for the PlexR[®] is very extensive. Many innovative services can be performed with the instrument, such as non-ablative blepharoplasty for wrinkle treatment, the removal of unwanted skin tumours, up to scar and acne treatment. Even small tattoos and botched permanent make-up can be removed. The physical anaesthesia created by the plasma makes it possible in ca. 90% of the cases to remove the undesired skin appearance without the need of anaesthesia injection. Patients are very willing to accept this.



Treatment of pronounced radial lip-furrows

The female patient represented by this example indicated that she was unhappy with her perioral region. During the examination deep radial lip-furrows were detected along the upper and lower lip in addition to moderate solar elastosis. The patient wanted an effective and low-risk treatment and she was prepared to accept a recovery time of around one week. The initial findings were documented following the clinical examination. After discussing various treatment methods, the patient decided upon the PlexR® plasma procedure. Following the examination, the consultation and the photo documentation, the skin of the area to be

elastosis is eliminated and the unwelcome wrinkles have mostly (ca. 95 percent) vanished. The achieved result is long lasting and the treated skin areas exhibit no signs of fibrosis.

Dynamic non-ablative blepharoplasty (DNB)

The region around the eyes is the central element of the face and is decisive in shaping the external appearance. Upon meeting someone, the first thing we do is make eye contact and look at the periorbital region. Drooping eyelids lead to a tired, sad and aged facial expression. In pronounced cases the excess skin can hang over and covering the eyelash line of the upper eyelid and lead to an impairment of the visual field (blinder effect).

Images 1a-c: patient with deep radial lip-furrows along the upper and lower lips and moderate solar elastosis. Prior to treatment (a), four days after the treatment with the red PlexR hand piece (b) and seven months after the procedure (c).



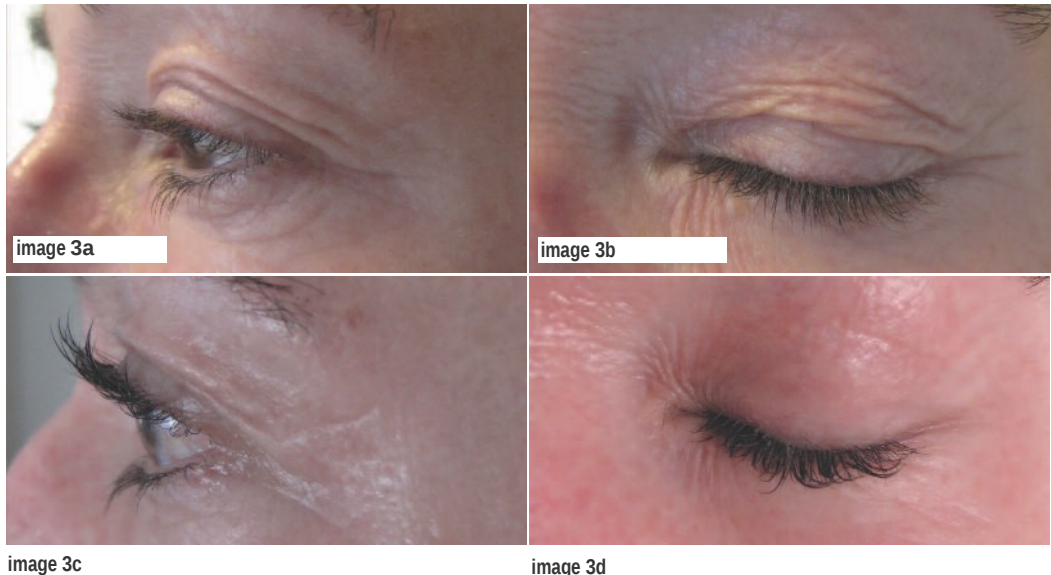
Images 2a and b: patient with perioral wrinkles prior to (a) and after the procedure (b).

treated was prepared through degreasing, aqua dermabrasion and the application of a numbing cream (ca. 45 minutes to take effect). Afterwards, the treatment was performed with PlexR®, using the red (stronger power, suitable primarily for the ablative effect) and the white (predominantly for the intrinsic effect) hand pieces. In the process of doing this, the author used a combination of spot and spray technique. The duration of the treatment in this case was about 20 minutes, after which the result had once again been documented by photos. After the treated areas were covered with a special care product, the patient received clear instructions as to how and with which products the skin should subsequently be cared for. Both the healing process and the final result (after seven months) were photo documented.

The patient and the attending doctor were very pleased with the achieved result. The

Dermatochalasis (a slackness of the eyelid skin) can lead to a sagging of the upper eyelids or to the creation of tear sacks and wrinkling of the lower eyelid.

Drooping eyelids are a reflection of ageing skin. Oftentimes an inherited weakness of the connective tissue exists, but a chronic inflammation or sun-related damage of the skin can also lead to a skin excess. The weakening of skin tissue with a loss of collagen fibres and elastin will then result in the slackening and reduction of skin elasticity. The average age when so-called „baggy eyes“ first appear is between 40 and 50 years of age. Until now eyelid corrections were generally done surgically. Due to possible side effects (scarring, asymmetries, missing eyelid closure, hematomas, all the way to blindness), long downtimes, and general fears about surgical procedures on the eye, there are many patients who would like to have an eyelid lift but



Images 3a-d: Patient with drooping lids prior to (a and b) and following a dynamic non-ablative blepharoplasty (DNB)

reject an invasive procedure for these very reasons. The PlexR[®] plasma technology offers an attractive alternative: it allows to perform an eyelid correction without risk and with minimal burden being placed upon the patient. The term “soft surgery” is actually an oxymoron, although it underlines the fact that the treatment is gentle (soft) while it nonetheless is able to compete with the results of the surgical technique.

Mode of action and approach

The plasma ablation of the PlexR[®] removes excess skin while remaining strictly epidermal. The charged particles of the plasma penetrate deeper layers of skin and create an immediate tightening while simultaneously accelerating the healing. The dynamic non-ablative blepharoplasty with the PlexR is performed with topical anaesthesia. There is no anaesthesia injection or other type of anaesthesia necessary. The follow-up care of the treated skin area is done with special products that contain sun protection. Following the procedure, patients should expect around two to three days of swelling and up to seven days of crust formation. After this time, an erythema will be noticeable for around one to three weeks. The recovery time is relatively short. As no deep dermal damage was caused, the patients are able to resume their usual daily activities virtually uninterrupted, as long as they make use of appropriate protective products and perhaps wear large sunglasses. The possibility of an existing brow ptosis should be diagnosed prior to the treatment, so that it can be included in the planning for the procedure. The drooping of the eyebrows

from their normal position above the bone of the eye socket may simulate or amplify the appearance of an excess of skin. A surplus of intra-orbital fatty tissue of the eye socket should be ruled out, because the PlexR[®] is not able to have an effect on the orbital fat hernias.

Advantages

The PlexR[®] treatment corresponds to the present-day level of professionalism (“state of the art”), because the DNB leaves no visible traces (scars or discoloration). The non-ablative treatment is a recommendable alternative to the conventional surgical technique, especially when tightening upper eyelids, lifting the brow and tightening the lower eyelids are . Essential advantages of the DNB with the PlexR are the gentle treatment without scars and the immediately noticeable result. There will also be no overcorrection and the shape of the eyes will not be changed. There is no need to fear side effects such as asymmetries, malfunction in eyelid-closure or hematomas. With that, this method of treatment becomes an attractive enhancement to the range of services in the aesthetic practice.

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|  | <p>Dr. Medic IMF Bukarest Adrian Roye Skin & Veins Zentrum Murnau Gabriele-Münter-Platz 4 82418 Murnau</p> |
| <p>Tel.: 08841 2226 Fax: 08841 90126</p> | <p>kontakt@dr-roye.de www.dr-roye.de</p> |