

NON-SURGICAL BLEOPHAROPLASTICS WITH THE USE OF COLD PLASMA

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Plasma is the fourth state of focus matter occurring in natural conditions in special situations (the plasma is the sun or lightning in time storm). The beach was known by Ernst Werner von Siemens and Michael Faraday in the nineteenth century.

Plasma has found and use in the twentieth century, it is used in street lighting, and also used and produced as spark plug.

In medicine, it has been used for about twenty years, mainly because of its destructive properties (ex electrosurgery). ions and gas molecules, while remaining in a low-excited state, affect other atmospheric air molecules.

Consequently, this leads to the creation of a plasma with biological potential.

It's called 'Medical Plasma or Cold Plasma'- and is often compared with lightning. It's not until the end the proper comparison because of high energy (high densityelectrons), the lightning-forming plasma has highly destructive properties.Currently available in Poland, devices use DC to generate plasma (eg: electric arc), alternating current (eg: discharge with a dielectric barrier), radio waves, microwaves or streams.Plasma can be produced, among others in a direct or indirect way. In the case of directly generated plasmas, the discharge gap is between the electrode of the device and the patient's body.At the approximation of the electrode of the device to a distance of approx. Plasma occurs and generate 0.5-1mm microduction.

It was only recently that the stimulatory effects of plasma on living tissues and cells began to be used. Application of the plasma in the application directly to the human body required maintaining its temperature below 40 ° C in order to get rid of the risk of thermal damage.

Such conditions are guaranteed by plasma atmospheric pressure (cold atmospheric pressure plasma) that arises as a result of the operation of electricity on a biologically inactive gas like argon,nitrogen, helium or air. Practically all elective energy is consumed on excitation of electrons.



Rycina 1. Urządzenie Plasma BT.

The BT Plasma device is based on the F-DBD (Floating Dielectric Barrier Discharge) technology protected by four patents and uses a natural method of generating plasma (from oxygen and nitrogen contained in the air) based on alternating current generating a low temperature plasma (temperature does not exceed 40 ° C) which is slightly ionized and contains a high content of neutral particles. Plasma BT (Figure 1) is a medical device class IIb (CE certificate number IT271142).

Practical aspects of carrying out non-surgical upper eyelid bluffaction with the use of Plasma BT

The physician performing the procedure should have knowledge in the field of external topography of the orbital area, taking into account anthropological differences. For example, the European eye fixture is available in 4 varieties. It should also be able to distinguish between ptosis (fall of the upper eyelid) and its alleged fall in the course of dermatochalasis. Before starting the procedure, the patient should be discussed the course of the procedure and the healing process and obtain written consent for the procedure. You should also warn the patient about the need to perform several treatments in the case of a large excess of folds eyelid and prepare it for lack.

She assessed the procedure for 3 (visible improvement) in the 5-point GAIS (Global Aero Improvement Scale) scale and was satisfied from the course of healing (the edema subsided after 2 days and scabs after sublimation dropped off after 3 days). A correction of excess skin was obtained and the pre-operative asymmetry between both eyelids. Reduction of the eyelid fold caused the discovery of the upper eyelid by 25% in the right eye and by 46% in the left eye and affected the widening of the eyelid by 14% for both eyes.



Rycina 2. Opostawiona igła z dystanserem.

The device has 3 modes of operation (Shot, Pulse, Continuous) and 5 levels of output power regulation. The device does not require patient's grounding. At Plasma BT uses a patented needle with a spacer (Figure 2) that allows stabilizing the device directly on the patient's body which improves the precision of the treatment and the healing rate improvement and even a subtle increase in skin overhang in the case of dermatochalasis with associated eyelid edema. In Fig. 4 and 5 are presented results of treatment of a 42-year-old woman (control pictures were taken 3 weeks after the procedure) using Plasma BT in the following settings: Pulse, 40Hz, Level 2.



Summary

Excessive folds of the eyelid occurring with age are a serious aesthetic problem. Until recently, the only available method of treatment was the surgical excision of excess skin. An alternative method has been available for some time, involving the use of so-called cold plasma.

From January this year, in Europe, a new device is available (class IIb medical device, CE certificate number IT271142) using F-DBD technology, protected by 4 patents, including a patented needle with a spacer.

Plasma BT is a universal device that will meet the expectations of both doctors beginning their adventure with cold plasma as well as doctors requiring the device to individualize therapy by adjusting the device settings to the clinical situation.



Rycina 4. Powieka prawa: przed i po 3 tygodniach od pierwszego zabiegu.



Rycina 5. Powieka prawa: przed i po 3 tygodniach od pierwszego zabiegu.

The surgical needle distancer allows to make precise sublimation points, which may be easier during the first treatments but will be also used by experts who appreciate the comfort and, above all, the speed of work with the distancer and the resulting shorter healing time. For the traditionalists, a classic surgical needle is also available with a safe hand. The Plasma BT device gives the operator the possibility to choose 5 power levels available in three operating modes (shot, pulse and continuous). Shot mode gives the possibility of precise defining the time of generating plasma by the device in the range of 0.3 - 0.6s, people experienced in working with the device will appreciate pulse modes (ex: large area of treatment) and continuous (ex: removal of changes).

In the clinical case presented in this publication, the Plasma BT device proved to be effective and a safe device that gives you the opportunity to improve Patient's quality of life (the excess of the eyelid creases covered the eyelashes in the upper left eyelid and narrowed the eyelid) without requiring surgical intervention

The patient, undergoing surgery, appreciated the fast healing time (swelling of the eyelid) typical for surgery and scabs in points sublimation lasted up to 3 days) and did not report any serious side effects other than typical ones such as: feeling warm in the area of the eyelid immediately after the procedure, delicate tearing out in the first day, redness of the eyelid persisting up to 7 days after the procedure.

Plasma BT is an effective alternative to surgical blepharoplasties in the treatment of excess eyelid fold giving the possibility of individualization of therapy thanks to 5 power levels and 3 modes of work. The use of a patented surgical needle distancer improves operator comfort and precision of surgery, shortens the time of the procedure and above all the healing time.

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