Experience of application of diode surgical laser «Lika-khirurg M» with a wavelength 445 nm in the field of aesthetic medicine

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Abstract – The laser coagulator «Lika-khirurg M» with a wavelength by 445 nm (dark blue radiation) and output power till 7 W is used for treatment of varicose extended veins, vascular malformations of skin (telangiectases, vascular spider, hemangiomas), cutaneous pigmented lesions (nevuses, pigment stains) and benign tumors of the skin (papilloma, keratoma, warts etc.).

Keywords - lasers in medicine, blue diode lasers.

The number of patients wishing to use services of aesthetic medicine continues to grow every year. It’s connected with increasing demands and requirements of modern day needs of the people. The availability or deficiency of outer physical defects on the human body has a critically powerful impact on the quality we live specifically the successes of career and social adaptation. The presence of outer physical defects can result in development of whole «spectrum» of psychical complexes.

Swift development of medical technologies was instrumental in development and introduction in clinical practice of aesthetic medicine of new low-traumatic methods of treatment. Laser surgery, being an effective mini-invasive alternative to the existent methods of treatment of dermatological diseases, belongs to such methods.

Cosmetology services have always been expensive and unobtainable for the average Ukrainian citizen, so there’s been a need for a large-scale implementation of laser equipment for Ukrainian healthcare networks, that would be affordable and compliant to international standards and quality. Today, home medical supply manufacturer, «Photonica Plus» (Cherkassy, Ukraine), has made laser medical equipment affordable and possible with a high caliber of quality in comparison to foreign competition available to Ukrainian healthcare systems.

The national producer of laser medical equipment, «Photonica Plus», currently offers a wide range of the equipment based on diode (semiconductor) lasers with the great choice of workings wavelengths of laser radiation – from visible to infra-red spectrum areas, that allows it to capture practically all ranges in aesthetic medicine.

Very interesting from point of application in dermatology and cosmetology there is the last development – a laser coagulator «Lika-khirurg M» with a wavelength by 445 nm (dark blue radiation) power 3 W, 5 W or 7 W. Already registered in Ukraine since 2012, this device has already has established a great reputation among many dermatologists. The «dark blue» laser is the first choice in treatment for coagulation of the superficial extended vessels, like as telangiectases and vascular spider on feet.

Wavelength 445 nm is fall at the maximum of absorption levels by hemoglobin and oxyhemoglobin of blood. In this connection for the delete of the pathologically changed vessels by a «dark blue» laser small power of radiation is required (1,5-5 W).

Under the influence of dark blue emission, the enlarged vessels are coagulated easily and quickly, providing the maximum cosmetic effect with minimum damage of surrounding body tissue. Also the reduction of effective radiated power keeps unpleasant feelings to the patient during procedure at a minimum.

Recently the laser coagulator «Lika-khirurg M» with a wavelength of 445 nm began to be applied for EVLA (endovenous laser ablation) of varicose extended veins of lower extremities. Clinical outcomes confirmed high efficiency in application of this type of laser for EVLA. The laser energy with a wavelength of 445 is used directly on treatment areas with close cooperation with hemoglobin owned to the maximum absorption by hemoglobin and oxyhemoglobin of blood. It allows to reach reliable coagulation of varicose extended veins at the simultaneous decline of power and general dose of laser radiation. This wavelength has a small depth of penetration (about 100 mkm), that reduces the risk of damage of surrounding tissue during long exposure of laser radiation.

Laser coagulator «Lika-khirurg M» has possibility to solve a wide range of problems of esthetic medicine including:

- laser coagulation of vascular malformations of skin (telangiectases, vascular spider, hemangiomas).
- removal of cutaneous pigmented lesions (nevuses, pigment stains);
- removal of benign tumors of the skin (papilloma, keratoma, warts etc.).

Thus, diode laser «Lika-khirurg M» with a wavelength of 445 nm can be applied for treatment of the pathologies in dermacosmetology with high efficiency.