Reshtovskaya K.B., Tarasenko S.V., Khurhurov B.R.
Moscow State University of Medicine and Dentistry. Department of Oral and Maxillofacial Surgery . Russian Federation, Moscow.

APPLICATION OF Er:YAG LASER IN PATIENTS WITH CHRONIC ODONTOGENIC OSTEOMYELITIS OF THE JAWS.

Abstract. In this study the possibilities of use of Er:YAG laser in terms of surgical reception are considered.
Key words: laser radiation, hard tissues, soft tissues, chronic odontogenic osteomyelitis.

Introduction. The array of available clinical applications for laser assisted dentistry is growing rapidly, with the greater number of applications for oral surgery. Among them, the Er:YAG laser system presents suitable characteristics for oral soft and hard tissue ablation. The use of Er:YAG laser in oral surgery procedures presents a number of advantages vs. conventional methods. Among others: reducing patient discomfort and enhancing the surgical site, precision, bacterial contamination, less collateral damage, post-operative effects such as pain and swelling are less pronounced. The application of surgical laser technology allows opening up new possibilities in optimizing the treatment.

Aim. Improving the efficiency of surgical treatment of the patients with chronic odontogenic osteomyelitis using the laser technology. Using methods of microbiological and immunological monitoring to assess the effectiveness of the treatment. Assessing the impact of laser radiation on the immune protection mechanisms in the oral cavity in the process of surgical treatment of patients with chronic osteomyelitis.

Materials and methods. We have treated 23 patients with this pathology, among which 14 patients underwent conventional treatment, 9 patients were treated using the Er:YAG laser. Dental laser systems OpusDuo Aqualite EC was applied to laser operations.

Local immunity in the oral cavity was investigated according to the S-IgA, IgA, IgG levels in saliva, phagocytic function of neutrophils in the swabs from the mouth cavity with identification of phagocytic index and phagocytic number, as well as according to the interaction between secretory, humoral and cellular factors of local protection.

Results. Patients reported reduced pain reaction, reduction of postsurgical collateral edema that provided a shorter healing period. Regeneration processes accelerated. Inflammation abated more rapidly. According to X-ray of the postsurgical area (in case of chronic odontogenic osteomyelitis) there was identified a much earlier formation of bone trabeculae than under the conventional treatment.

We discovered that the traditional surgical treatment of patients does not restore the secretory, humoral, cellular mechanisms of local protection and their interaction. The application of erbium laser normalizes secretory, humoral and cellular factors of local protection.

Discussion. Thus, laser radiation has a beneficial impact on the regeneration and resolution of the infection, accelerates the sanitation process of the postsurgical wound from microorganisms, its healing, reducing the risk of secondary infections and complications. The application of erbium laser among the patients with chronic odontogenic osteomyelitis favors to the normalization of the secretory, humoral and cellular protective mechanisms in the oral cavity. The Er:YAG laser has been demonstrated to have an excellent ability not only in hard tissues but in soft ones as well. Due to easy tissue ablation with strong haemostasis and bacteria killing effects, lasers are frequently employed in oral surgery, where they have achieved widespread use in treatment technique of oral mucosa lesions (e.g. fibroma, papilloma, leukoplakia, mioblastoma etc.). According to our experience we can say that laser in oral surgery is an excellent device.