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**COMBINED USE OF ERBIUM (ER: YAG) AND NEODYMIUM (ND: YAG) LASERS AT THE SURGICAL STAGE OF CHRONIC PERIODONTITIS TREATMENT**

**Introduction:** The need to improve surgical techniques encourages us to turn to modern technologies; namely: use of various types of lasers, allowing for creation of the best conditions for postoperative wound healing and improvement of conditions for bone regeneration.

**The aim** of the studyis to increase effectiveness of complex treatment of patients with chronic generalized periodontitis by using lasers (Er: YAG (erbium) with wavelength of 2940 nm and Nd: YAG (neodymium) with wavelength of 1064 nm) at the surgical stage.

**Materials and Methods:** 70 patients diagnosed with generalized periodontitis of moderate severity were examined and operated. All patients examined were divided into two groups. Group 1 included 35 patients, who at the surgical stage were subjected to operative interventions according to the modified Widman technique. Group 2 included 35 patients, who at the surgical stage were subjected to operative interventions according to the same technique, but with the use of lasers: a continuous paramarginal incision was performed under local anesthesia in the area of the operated tooth segment, the incision was performed by Er: YAG laser (2940nm, SSP, 2W). Then the mucoperiosteal flap was raised by the elevator for a better view of surface of the tooth root and alveolaris processus; the second incision was also performed right along the subgingival space, around each tooth, raising gums from hard tissues of the tooth to the very bottom of the pocket. Next, granulation and pathological epithelium of pockets was removed by Nd: YAG laser, (1,5W). At first, granulations were coagulated by the laser, and then they were carefully cleaned using abrasors, which significantly reduced duration of the surgery. Sharp bony prominences of the alveolaris processus were polished by the erbium laser, and tooth root and walls of the bone pocket were treated with this laser, were closed with automembrane. Sutures were applied.

The periodontal index PI (A.L. Russel) was determined in all patients. The depth of periodontal pockets and the value of gingival recession were determined using the classification of gingival recessions according to Miller (1985). All clinical examination data was recorded prior to surgery, after surgery, within 6 months and within 1 year. X-ray examination was performed before treatment and 6 and 12 after treatment.

**Results:** There was no statistically significant difference between indicators of depth of periodontal pockets in patients from Group 2 prior to treatment (6.6 ± 0.18mm) and these indicators in patients from Group 1 (6.94±0.21mm). 6 month after surgery, the result in Group 2 improved (4.31±0.22mm) and was significantly different from this parameter in patients from Group 1 (5.37±0.16mm). At one year, indicators in Group 2 (3.86±0.2mm) were also significantly better than in Group 1 (5.6±0.21mm)

The value of gingival recession according to Miller (1985) prior to treatment in Group 1 was on average 2.2±0.07mm. 6 months after operative intervention, recession significantly increased up to 3.2±0.07mm, and at one year it remained almost without changes – 3.11±0.07mm (р > 0.05). Group 2 patients prior to treatment had recession value of 2.23±0.07mm, 6 month after surgical stage of treatment recession significantly increased up to 3.0±0.02mm, in one year indicators significantly improved and remained stable at 2.54±0.09mm .

РІ Index (A.L. Russel) in patients from Group 2 prior to treatment was 3.81±0.19, 6 month after surgical stage of treatment, during control examination, the index significantly decreased to 2.24±0.18 (р < 0.05), and at one year remained almost unchanged (2.3±0.19) (р > 0.05). In Group 1 patients prior to treatment this indicator was at 4.22±0.06, 6 month after treatment it also significantly decreased to 2.06±0.17 and at one year it remained at the same level (1.98±0.15) (р > 0.05).

**Conclusions:** The results of our own observations have shown that the developed method of surgical treatment of generalized periodontitis with the use of Er: YAG (erbium with wavelength of 2940 nm) and Nd: YAG (neodymium with wavelength of 1064 nm) was effective.