



COMPLEX ORTHOPEDIC TREATMENT OF ANOMALIES AND DEFORMATIONS OF THE DENTAL SYSTEM IN A FORMED BITE USING LASER TECHNOLOGIES ABSTRACT

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ABSTRACT

Treatment of dental anomalies in adults is one of the pressing problems of orthopedic dentistry. The clinical picture of malocclusion in them is complicated by the loss of teeth, deformation of the dentition and jaws, and functional overload of the periodontium caused by a violation of occlusion. In adults, the reactivity of the body decreases, the plasticity of the jaw tissue decreases, the duration of orthodontic treatment in a formed occlusion is long, and the expected effect is not always achieved. Patients are under the supervision of specialists for a long time, the results of orthodontic treatment are less stable, and there is a greater tendency to relapse. Frequent failures force doctors to limit themselves to prosthetic measures

Introduction. The beginning of the 20st century is marked by the further advancement of laser optical technologies in various areas of practical medicine. One of these areas is dentistry. In recent years, a large number of specialized registered laser systems for dentistry have been created, which have significantly improved the quality of patient treatment in the clinic of orthopedic dentistry and orthodontics. The article presents 38 years of experience in the use of laser technologies in dental practice: in the clinic of therapeutic dentistry (treatment of pathology of the oral mucosa and periodontal tissues), in orthopedic dentistry and orthodontics (teeth preparation and laser compactosteotomy), in maxillofacial surgery (using a "laser scalpel").

The use of lasers in dentistry is based on the desire to make surgical interventions and procedures minimally traumatic, minimally painful and minimize blood loss. In addition, with the help of laser technologies, the problem of accelerating the reparative processes of bone and soft tissues, forming a high-quality scar, and obtaining a good cosmetic result is solved.

Goal: to increase the effectiveness of complex orthopedic-surgical and orthodontic

treatment of patients in the clinic of orthopedic dentistry and orthodontics.

Material and research methods. Existing laser devices for dentistry allow you to make a choice in favor of one system or another. For example, for therapeutic dentistry (treatment of pathologies of the oral mucosa), it is enough to have a relatively inexpensive portable diode laser with different (depending on specific medical technologies) wavelengths: 0.49 - 0.68, 0.82 - 0.84-0, 85-0.95-0.98-0.99 microns. The Department of Orthopedic Dentistry has developed and put into practice a method of photodynamic therapy for diseases of the oral mucosa and periodontal tissue, as well as a method of preparing the alveolar process using low-intensity laser radiation before orthodontic treatment of patients in a formed occlusion, as well as in the retention period of orthodontic treatment. For outpatient maxillofacial surgery, a CO₂ laser can be used, operating in both continuous and pulsed modes. Radiation from a neodymium laser with a wavelength of 1.06 microns gives a good effect of dissection and photocoagulation of soft tissue, and can also be used for bone tissue pathology. Erbium lasers, as the most modern devices for dentistry, depending on the radiation modes, can work on both soft (cut) and hard tissue (tooth, bone).

Factors that determine the choice of laser type for various areas of dentistry: a) analysis of the spectral characteristics of the dominant chromophore of biological tissue - water, hydroxyapatite, hemoglobin, melanin (dependence of absorption on wavelength λ); b) depth of light penetration (h) into hard or soft biological tissues; c) volume of biological tissue (v) heated by laser light; d) temperature (T) required to achieve a given medical effect, power (P) or energy of the laser beam (E); e) thermal effect on surrounding tissues (Δh), continuous, pulsed or combined laser operating modes; f) the achieved medical effect - preparation, ablation, coagulation - and its optimization. Laser dentistry is not intended to replace conventional techniques; it offers additional advantages compared to traditional treatment. Radiation with a wavelength of 1.07; 1.41 microns has a coagulation effect and, to a lesser extent, tissue cutting property. The penetrating ability of radiation of 1.07 microns in soft tissues with the same parameters of power, pulse energy and pulse duration is greater than that of radiation with a wavelength of 1.32 microns, therefore, the coagulation ability and the necrosis zone are more pronounced. Therefore, in the presence of bleeding in the surgical area, for dissection of tissue of a relatively larger volume (benign formations), radiation with a wavelength of 1.07 microns is advantageous, for more gentle vaporization - radiation with a wavelength of 1.34 microns. We have developed a laser compactosteotomy technique with a wavelength of 1.07 microns. Radiation with a wavelength of 2.9 microns penetrates tissue to a depth of several tens of microns. The main feature of erbium laser radiation is a method of tissue ablation called laser hydrokinetics. Hydrokinetics is the process of removing biocalcified tissue by optimizing the energy absorption of atomized water particles (water-air mixture). At the same time, microparticles charged with energy acquire the ability to accurately and accurately remove tissue. The water particles are a charged agent that removes the target tissue. We have developed a technique for preparing teeth for orthopedic structures using an erbium laser with a wavelength of 3,2 microns. Due to the supply of a water-air mixture to the optical dental handpiece, there is no pain effect when the radiation acts on soft tissues, and anesthesia is not required. Discomfort rarely occurs, since energy is absorbed by the liquid at the cellular level. This is the essence of photoablation.

The radiation of all lasers, due to the photothermal effect, has a bactericidal effect. Thus,

the primary use of the erbium laser is on tooth tissue. The main indications for the use of laser technologies: gingivectomy; frenectomy; cuts; treatment of aphthous ulcers; leukoplakia; herpetic rashes; peri-implantitis; pre-prosthetic preparation of bone tissue; removal of affected dentin; hemangiomas; sealing dental fissures; root canal sterilization; pulp coagulation; de-epithelialization of flaps in the treatment of marginal periodontitis; reduction of tooth sensitivity, treatment of inflammatory diseases of the oral mucosa and periodontal tissues.

Results. Advantages of laser technologies: more careful removal of carious tissue; absence of vibration (when using a boron), as a result of which microcracks in the enamel do not appear and the tooth does not heat up; lack of mechanical pressure; post-filling pain; dry surgical field; the ability to perform any procedures on soft tissues; accelerated healing; sterilization of the surgical field; no risk of cross infection; easy access to any treatment area; maximum comfort for the doctor; removal of carious tissue; disinfection of the wound channel; treatment of periodontal pockets; gingivectomy; frenectomy; aphthous ulcers; removal of large areas of mucosa affected by leukoplakia; minimally invasive removal of retention cysts of the minor salivary glands. Currently, ErYAG lasers have been created to work on soft and hard tissues. At the Department of Orthopedic Dentistry, laser surgical units "Spear" and "Optima" with wavelengths of 1.06 microns, 1.32 microns and 2.9 microns were successfully tested (about 500 outpatient operations were performed).

Conclusion. The use of laser optical technologies significantly increases the efficiency of complex orthopedic-surgical and orthodontic treatment of patients in the clinic of orthopedic dentistry and orthodontics (2-2.5 times).

References:

1. Akhmadov I. N. CLINICAL FEATURES AND PRINCIPLES OF TREATMENT OF ALLERGIC STOMATITIS WHEN USING PARTIAL AND COMPLETE REMOVABLE PLATE DENTURES //BBK 72 I66. – 2021. – P. 262.
2. Shavkatovich OR, Nizomitdin AI EFFECTIVENESS OF THE USE OF OSTEOPLASTIC MATERIAL" STIMUL-OSS" IN SAMARKAND //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – No. 11. – pp. 612-617.
3. Nizomitdin AI THERAPEUTIC EFFECT OF IMPROVED ENAMEL SURFACE PREPARATION TECHNIQUE IN THE TREATMENT OF ACUTE INITIAL CARIES OF TEMPORARY TEETH IN CHILDREN //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – No. 11. – pp. 440-445.
4. Akhmadov I. REVIEW OF MEANS FOR FIXATION OF DENTAL PROSTHESES // Collected Book of Scientific Practices SCIENTIFIC AND PRACTICAL CONFERENCE WITH INTERNATIONAL PARTICIPATION AND INITIAL TRAINING WITH INCIDENTAL PRACTICAL TECHNIQUES "CONVENTIONAL METHODS" DIAGNOSTICS, PREVENTION AND CARE OF MAIN DENTAL ILLNESSES." – 2021. – P. 43.
5. Nizomitdin AI Modern Methods of Odontopreparation for MetalCeramic for Beginner Prosthodontists //Eurasian Medical Research Periodical. – 2023. – T. 18. – S. 98-102.
6. Akhmadov I.N. Disturbances in the lipid peroxidation system in paradontosis //IQRO. – 2023. – T. 3. – No. 2. – pp. 124-127.
7. Sanaqulov J., Sadriyev N., Axmadov I. KERAMIK KIRITMANING BOSHQA RESTAVRATSIYA VOSITALARI BILAN SOLISHTIRISH // Central Asian magazine education And innovation _ –

2023. – T. 2. – No. 9 Part 2. – pp. 22-26.

8. Sadriev N., Sanakulov J., Akhmedov I. ANALYSIS OF PROFILE TELERENTGOGRAM AND PLANNING ORTHODONTIC TREATMENT OF DENTAL ANOMALIES AND DEFORMATIONS IN CHILDREN AND ADOLESCENTS USING AUTOMATED EQUIPMENT WITH ELEMENTS ARTIFICIAL INTELLIGENCE "ALLEGRO" // Eurasian magazine technologies And innovation _ – 2023. – T. 1. – No. 9. – pp. 69-71.

9. Akhmadov I. CERAMIC INLAY COMPARED WITH OTHER RESTORATIVE PROCEDURES //Eurasian Journal of Medical and Natural Sciences. – 2023. – T. 3. – No. 9. – pp. 126-131.

10. Akhmadov I. VARK DEPARTMENT OF ORTHOPEDIC DENTISTRY //Eurasian Journal of Medical and Natural Sciences. – 2023. – T. 3. – No. 9. – pp. 132-136.

11. Akhmadov I. et al. VARK DEPARTMENT OF ORTHOPEDIC DENTISTRY // Central Asian magazine education And innovation _ – 2023. – T. 2. – No. 10 Part 3. – pp. 57-61.

12. Akhmadov I. et al. CERAMIC INLAYS COMPARED TO OTHER RESTORATION PROCEDURES // Eurasian magazine technologies And innovation _ – 2023. – T. 1. – No. 10. – pp. 186-191.

13. Sadriev N. et al. DENTAL IMPLANTOLOGY IN THE DIABETIC PATIENTS // Bulletin students new Uzbekistan . – 2023. – T. 1. – No. 10. – pp. 44-48.

14. Sadriev N. et al. DENTAL IN CHILDREN WITH TRAUMATIC STOMATITIS COMPLEX DENTAL TREATMENT OF DISEASES AND THEIR EVALUATION OF PREVENTION // Central Asian magazine education And innovation _ – 2023. – T. 2. – No. 10 Part 3. – pp. 62-65.

15. Sadriev N. et al. PREVENTION OF PROSTHETIC DENTISTRY // Bulletin teachers new Uzbekistan . – 2023. – T. 1. – No. 10. – pp. 54-57.

16. Sanakulov Zh., Sadriev N., Akhmadov I. COMPLEX ORTHOPEDIC-SURGICAL TREATMENT OF ANOMALIES AND DEFORMATIONS OF THE DENTAL SYSTEM IN A FORMED BITE USING LASER TECHNOLOGIES ABSTRACT // Central Asian Journal of Education and Innovation. – 2023. – T. 2. – No. 9 Part 2. – pp. 27-31.

17. Jamshed S. PREVALENCE OF PHYSIOLOGICAL BITE FORMS IN PEOPLE WITH DIFFERENT FACE TYPES //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – No. 11. – S. 451-454.

18. Nazhmiddinovich SN, Obloberdievich SJ Optimization of Orthopedic Treatment of Dentition Defects in Patients with Chronic Diseases of the Gastrointestinal Tract //Eurasian Research Bulletin. – 2023. – T. 17. – S. 157-159.

19. Obloberdievich SJ Grade States Fabrics Periodontal by Clinical Indexes //Scholastic: Journal of Natural and Medical Education. – 2023. – T. 2. – No. 5. – pp. 175-180.

20. Sanakulov Zhamshed Obloberdi ugli , Zubaydullaeva Maftuna Alisher kizi , & Norbutaev Alisher Berdikulovich . (2022). CLINICAL AND EPIDEMIOLOGICAL RESULTS OF ORTHOPEDIC TREATMENT OF PATIENTS WITH PARTIAL ABSENCE OF TOOTH. Galaxy International Interdisciplinary Research Journal , 10 (1), 958-960. Retrieved from <https://www.giirj.com/index.php/giirj/article/view/1171>

21. Nazhmiddinovich SN OPTIMIZATION OF ORTHOPEDIC TREATMENT OF DENTAL DEFECTS IN PATIENTS WITH CHRONIC GASTROINTESTINAL DISEASES //Spectrum Journal of Innovation, Reforms and Development. – 2022. – T. 10. – S. 53-58.

22. Najmiddinovich SN et al. CARIES IN SCHOOL CHILDREN AND TREATMENT PREVENTIVE MEASURES //American Journal of Pedagogical and Educational Research. –

2023. – T. 16. – S. 44-49.

23. Najmiddinovich SN et al. PREVENTION PROGRAM DENTAL DISEASES IN SCHOOL-AGE CHILDREN //Intent Research Scientific Journal. – 2023. – T. 2. – No. 9. – pp. 24-31.

24. Sadriev N. et al. TISHLARNI PROTEZLASH JARAYONIDA ORTOPEID STOMATOLOGNING DEONTOLOGIK MUNOSABATGA KIRISHISHI // Central Asian magazine education And innovation _ – 2023. – T. 2. – No. 11 Part 3. – pp. 109-113.

25. Sadriev N. et al . PANDEMIYA SHAROITIDA STOMATOLOGIK FAVQULODDA VAZIYATLAR BO'YICHA KO'RSATMALAR // Central Asian Journal of Education and Innovation. – 2023. – T. 2. – No. 11 Part 3. – pp. 95-99.

26. Khayrullayevna ON, Ulugbek K. AESTHETIC RESTORATION USING ZIRCONIUM CROWNS //Intent Research Scientific Journal. – 2023. – T. 2. – No. 9. – pp. 83-90.

27. Anvarovich ES, Qobilovna BZ COMPARATIVE ANALYSIS OF VARIOUS METHODS OF GUM RETRACTION IN ORTHOPEDIC DENTISTRY //Spectrum Journal of Innovation, Reforms and Development. – 2023. – T. 11. – S. 79-83

