WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 5, Issue 11, November - 2024

USING OF BASIC MATERIALS USED IN REMOVABLE ORTHODONTIC CONSTRUCTIONS IN CHILDREN

Yarmuhammedov Nabijon Navruzovich
Axmedov Alisher Astanovich
Samarkhand State Medical University

Abstract
The rapid development of modern orthodontic technologies has led to the widespread introduction of previously unused orthodontic appliance designs made of various groups of restorative materials [7, 8, 14].

Introduction

The basis of orthodontic construction during the entire period of treatment in the oral cavity is not only contact with tooth enamel and adjacent tissues of the oral mucosa, but also constant interaction with the main biological environment - oral fluid, causing certain changes with pronounced adaptation-compensatory properties. [1, 2, 18, 19, 23]. The problem of increasing the efficiency of biophysical studies that allow to establish the physical parameters of oral fluid (NRF), which is not stimulated at the stage of orthodontic treatment, is that statistically significant changes in the qualitative and quantitative composition of oral fluid (NRF), which is not stimulated at the stage of orthodontic treatment, are observed at the early stages of current orthodontic treatment. NRF occurs with the use of mechanically acting and functionally inducing appliances [3, 4, 9]. The study of NRF indicators in the treatment of dentoalveolar anomalies with the use of removable orthodontics in children, allowing an objective assessment of the timing of normalisation of biophysical parameters, is presented in single works and has no systematic features. In the available scientific literature there is no information about the conditions of adaptation of the paediatric population to different groups (classes) of basic materials used in appliance therapy. The systematisation of the biophysical indices of BPZ will make it possible to reliably assess the effectiveness of the adaptation mechanism after the application of removable orthodontic appliances in children and obtain meaningful results in dentistry. In addition, selective use of basic material in the initial period of orthodontic treatment will contribute to the normalisation of microcirculation in periodontal tissues, preservation of local and humoral immunity, establishment of equilibrium state in the ‘enamel’ environment. Inflammation of tissues of the artificial bed during long-term stability of therapeutic and preventive measures, as well as maintenance of NRH homeostasis to prevent the development of

carious processes. The aim of this study is to evaluate the influence of the main materials used in paediatric removable orthodontic appliances on the mechanism of oral fluid adaptation by biophysical indicators.

Materials and research methods:

Based on the Modern International Classification of iso1567 1999 (materials used to make dental and artificial bases), we have separated 3 types of base materials used to make removable Orthodox tools [20]. Type 1 Material is represented by a cold-treated base plastic based on polymethyl methacrylate (PMA) "meliodentr" ("heraus Kulzer", Germany), which belongs to copolymers based on acrylic resins. Fine powder, activated by an inhibitor and dimethylparatoluidine-methyl methacrylate with a small amount of PMMA - benzoyl peroxide; dimethylparatoluidine-methacrylate with a solvent activator. The traditional design was carried out using a patch-based water polymerization method on the ivomat IP3 (ivoclarvivadent) device. PMMA type 2 material is "proteol Ho" ("germac", Italy), which belongs to powder plastic based on hot polymerization acrylic resin and is a well-dispersed, suspended and concentrated copolymer. [5, 15]. Indicators of LVH ductility in the 1st, 2nd and 3rd groups of patients in different periods of orthodontic treatment are shown in Table 1. Evaluation of the qualitative parameters of HPV ductility in patients of the study group after 2 months of corrective treatment suggests that the most significant reduction in indicators (29.0 ± 1.4%) is provided by devices made of fast-curing base plastics of the cold-curing method. The minimum reduction (16.7 ± 0.8%) of the most compatible values with the biochemical parameters of children without dental abnormalities is achieved by using basic light-type polymeric materials. Among the published results of scientific studies there is no information on the parameters of hpv ductility, as well as their changes during corrective treatment in children. It can be assumed that a sharp decrease in the rheological parameters of NRH and a consistent recovery from the beginning of treatment to the 60th day using various types of hardening and the chemical composition of the base material indicates an increase in the rate (volume) of unmotivated mixed saliva under the influence of hardware exposure. Modern literature data confirm that in the early stages of orthodontic treatment there is hypersalivation in parts of the salivary glands, supporting salivary regulation and mineralization functions [14]. Systematic analysis of test results of patients in the control group suggests that type I microcrystalline predominates in NRH. The variability of the crystal content of Type I ranges from 58.6±2.6% to 59.8±2.7%, and from Type II – 34.3±1.6% to 35.It is in the range of 7±1.6% and in the range of Type III – 5.1±0.2% to 7.1±0.3%. The average value (Type I –59.2 ±2.6%; Type II–35.0

±1.6%; Type III–6.1 ± 0.2%) optimally characterizes the type of microcrystal of HPV in the 1st, 2nd and 3rd groups of patients in different periods of conditional orthodontic treatment, as shown in Table 2. A comparative analysis of the indicators of microcrystalline HPV in patients in the study group after 2 months of orthodontic treatment makes it possible to conclude that when using cold-curing equipment made of fast-curing-based plastics, the most noticeable reduction in the content of type I crystals with a significant increase in type III crystals (218.1 ± 8.7%) is observed. Minimum reduction in the level of type I crystals (16.5 ± 0.8%) Minimum increase in the content of type III crystals (122.9 ± 6.1%), consistent with the biophysical indicators of children without dental abnormalities, lightly published scientific data of polymerization do not provide exhaustive information on the ratio of microcrystalline forms in nrh and their changes at the stage of orthodontic treatment in children. In our opinion, a significant increase in microcrystalline of type III mixed saliva in combination with other diagnostic signs, the combination of prognostic signs associated with the development of the process of caries processes in milk and permanent teeth and a significant increase in type III microcrystals in decompensated NRF suggests a decrease in the regulatory, mineralization, protective and buffering functions of saliva. The results we get confirm modern scientific data of domestic and foreign researchers [17, 22]. Comparative evaluation of the examination of patients in the control group makes it possible to establish the predominance of positive RAM on the surface of epithelial cells of SOPR (70% of epithelial cells in smear imprints The variation of the indicator of positive RAM varies from 73.1 ± 3.7% to 74.9 ± 3.6%). Average value of positive RAM (74.0±3. 6% of epithelial cells in the smear) and negative RAM (26.0 ± 1.2%) were a conditional norm that objectively reflects the adhesion bacterial activity of epithelial cells of SOPR in children. The reaction of adsorption of microorganisms on the surface of the epithelial cells of SOPR in the 1st, 2nd and 3rd groups of patients at various periods of orthodontic treatment is shown in Table 3. The available results of scientific studies do not allow to form an objective assessment of the level of nonspecific resistance of epithelial cells to the adhesion ability of epithelial cells and their changes at the stage of orthodontic treatment in children. When using a device made of fast-curing base plastics of the cold-curing method, the minimum reduction of the positive frame (14.1 ± 0.7%) (40.0 ± 1.9%), consistent with the biophysical indicators of children without the most significant dental abnormalities of the positive frame (14.1 ± 0.7%) with a noticeable increase in the positive frame (7.3 ± 0.4%) (20.7 ± 1.1%) is provided by the basic material of light type polymerization. In our opinion, the prognostic value of assessing nonspecific resistance to COPD by counting the number of bacteria adsorbed on the surface of

epithelial cells determines the feasibility of further scientific research in this direction. A decrease in the threshold (70%) The adherent activity of epithelial cells of SOPR is probably the cause of a violation of normal microbiosis of the oral cavity. This increases the risk of inflammatory or allergic reactions from the tissues of the prosthetic bed, reduces the compensatory capacity of the micro-ecosystem, reduces the effectiveness of sanitary mechanisms, violates physiological methods of maintaining homeostasis, as a result of which leads to the development of dysbiosis. The long-term and gradual decline in the adhesion capacity of epithelial cells of SOPR makes it possible to determine a significant decrease in the effectiveness of the digestion, regulation, mineralization, excretion, protective and buffering functions of saliva The provisions we have formulated are confirmed by modern scientific studies of domestic and foreign authors [6, 21]. Dynamic analysis of the biophysical parameters of LVH shows that the highest point of the stage of inflammation of the part of the dental system in response to the effect of hardware therapy occurred on the 14th day from the moment of application of the corrective structure. On 30-60 days, the signs of inflammation gradually disappear, and HPV indicators normalize. Setting the timing of the adaptation Periodthe recovery of the biophysical parameters of NRH is confirmed by clinical manifestations. The device is not recognized as a foreign body in the oral cavity, discomfort is reduced, there is no pain during use, salivation is optimized. The final formation of the adaptive mechanism associated with a decrease in the parameters of ductility, the microcrystalization of NRH, as well as the restoration of the adsorption capacity of epithelial cells of SOPR occurs by day 60 with a gradual increase in the mode of use of the orthodontic device up to 1 day 18 hours. Thus, a comprehensive assessment of biophysical indicators, such as the ductility of HPV, the reaction of adsorption of microorganisms on the surface of epithelial cells of SOPR, the determination of the type of microcrystal of mixed saliva, allows an objective and reliable assessment of the adequacy of adaptive reactions at the stage of removable orthodontic treatment of children using basic plastics. A systematic analysis of the biophysical parameters of mixed saliva proved that patient adaptation during orthodontic treatment using basic photocurable materials occurs in a shorter time compared to hardware treatment using basic cold and hot polymeric materials. It has been scientifically demonstrated and clinically confirmed that the optimal timing of normalization of the adhesion activity of epithelial cells of SOPR and microcrystal of mixed saliva, as well as the adaptation to the removable orthodontic device from the basic material to the biophysical parameters of short LVH of the parameters of oral fluid fluidity compared with the initial value includes two periods (phases). The first stage (from the moment of application to the 14th day) is

represented by an increase in the negative frame with an increase in the content of microcrystals of type III, as well as a decrease in the parameters of the viscosity of the unstimulated saliva. The second stage (Day 14-60) is associated with the restoration of the initial biophysical parameters of NRH, as well as the normalization of the content of type I microcrystals with an increase in the adhesion activity of epithelial cells of SOPR.

Conclusion:

The obtained laboratory and clinical results indicate the prospect of studying oral fluid for diagnostic purposes not only in terms of revealing biological functions in the body and ensuring dynamic homeostasis of the internal environment, but also as part of the search for new non-invasive and safe expression methods aimed at improving the effectiveness and accessibility of dental treatment to pediatric populations.

References:

1. Makhmudovna T. M. et al. THE COURSE OF MALFORMATION AND CORNEAL EROSION IN TUBERCULOSIS PATIENTS //Open Access Repository. – 2023. – Т. 4. – №. 03. – С. 60-66.
2. Dilafruz K. ROOT CANAL PREPARATION AS A STAGE OF TOOTH RESTORATION //International journal of advanced research in education, technology and management. – 2024. – Т. 3. – №. 9. – С. 100-107.
3. Dilafruz K. COMPREHENSIVE TREATMENT GENERALIZED PERIODONTITIS AND CLINICAL AND RADIOLOGICAL EVALUATION OF EFFECTIVENESS //International journal of advanced research in education, technology and management. – 2024. – Т. 3. – №. 9. – С. 108-116.
4. Ахмедов А. А. Иммунологические аспекты патогенеза гингивита и пародонтита //IQRO. – 2023. – Т. 3. – №. 2. – С. 121-123.
5. Ризаев Ж. А., Ахмедов А. А. GROWTH AND DEVELOPMENT OF GENERAL MEDICAL PRACTICE IN THE REPUBLIC OF UZBEKISTAN TO IMPROVE DENTAL CARE //ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ. – 2023. – Т. 4. – №. 3.
6. Ахмедов А. А., Нарзиева Н. DENTAL PROSTHETICS ON IMPLANTS AND THEIR FEATURES //American Journal of Pedagogical and Educational Research. – 2023. – Т. 16. – С. 132-135.
7. Astanovich A. D. A. et al. The State of Periodontal Tissues in Athletes Engaged in Cyclic Sports //Annals of the Romanian Society for Cell Biology. – 2021. – С. 235-241.

8. Alimjanovich R. J., Astanovich A. A. СОВЕРШЕНТСВОВАНИЕ СТОМАТОЛОГИЧЕСКОЙ ПОМОЩИ В УЗБЕКИСТАНЕ С ИСПОЛЬЗОВАНИЕМ КОНЦЕПТУАЛЬНОГО ПОДХОДА ДЛЯ УЛУЧШЕНИЕ ЕЕ КАЧЕСТВА //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2023. – Т. 8. – №. 4.
9. Ортикова Н. Глобализация биоэтики в период пандемии COVID-19 //Общество и инновации. – 2020. – Т. 1. – №. 1/S. – С. 677-682.
10. Ортикова Н. Влияние психоэмоционального напряжения детей на состояние здоровья полости рта //Общество и инновации. – 2023. – Т. 4. – №. 7/S. – С. 328-333.
11. Ортикова Н. Х., Ризаев Ж. А., Мелибаев Б. А. ПСИХОЛОГИЧЕСКИЕ АСПЕКТЫ ПОСТРОЕНИЯ СТОМАТОЛОГИЧЕСКОГО ПРИЕМА ПАЦИЕНТОВ ДЕТСКОГО ВОЗРАСТА //EDITOR COORDINATOR. – 2021. – С. 554.
12. Ортикова Н. Тенденция эффективности профилактических мероприятий путем коррекции психологического стресса у детей на стоматологическом приёме //Общество и инновации. – 2022. – Т. 3. – №. 6. – С. 181-189.
13. Qobilovna B. Z., Nodirovich E. A. EVALUATION OF ORTHOPEDIC TREATMENT WITH REMOVABLE DENTAL PROSTHESES FOR PATIENTS WITH PAIR PATHOLOGY //Spectrum Journal of Innovation, Reforms and Development. – 2023. – Т. 11. – С. 95-101.
14. Anvarovich E. S., Qobilovna B. Z. INFLUENCE OF DIFFERENT TYPES OF RETRACTION THREADS ON THE DEGREE OF GINGI RECESSION //Spectrum Journal of Innovation, Reforms and Development. – 2023. – Т. 11. – С. 84-86.
15. Tohirovna M. L., Qobilovna B. Z. Optimization of Complex Methods Treatment of Inflammatory Periodontal Diseases //Eurasian Research Bulletin. – 2023. – Т. 17. – С. 138-143.
16. Tavakalova Q. M., Qobilovna B. Z., Sarvinoz Y. Preventive Measures in the Treatment of Caries in School children //Eurasian Research Bulletin. – 2023. – Т. 17. – С. 60-65.
17. Исламова Н., Чакконов Ф. Роль продуктов перекисного окисления липидов и противовоспалительных цитокинов крови в развитии заболеваний полости рта при гипотиреозе //Общество и инновации. – 2020. – Т. 1. – №. 1/s. – С. 577-582.
18. Fakhriddin C., Shokhruh S., Nilufar I. ENDOKANAL PIN-KONSTRUKSIYALARNI ISHLATISHDA ASORATLAR VA XATOLAR TAHLILI //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – Т. 7. – №. 1.
19. Shoxrux S., Shoxrux I., Faxriddin C. PREVENTION AND TREATMENT OF ORAL INFECTIONS IN DENTURE WEARERS //International Journal of Early Childhood Special Education. – 2022. – Т. 14. – №. 4.

20. Xusanovich C. F. COMPLETE REMOVABLE PROSTHESIS SUPPORTED BY IMPLANTS //European International Journal of Multidisciplinary Research and Management Studies. – 2023. – T. 3. – №. 11. – C. 127-133.
21. Xusanovich C. F. et al. PROSTHETICS A COMPLETE REMOVABLE PROSTHESIS BASED ON IMPLANTS //European International Journal of Multidisciplinary Research and Management Studies. – 2023. – T. 3. – №. 11. – C. 122-126.
22. Najmiddinovich S. N. et al. CARIES IN SCHOOL CHILDREN AND TREATMENT PREVENTIVE MEASURES //American Journal of Pedagogical and Educational Research. – 2023. – T. 16. – C. 44-49.
23. Khusanovich K. B. R. C. F. TYPES AND APPLICATIONS OF DENTAL COMPLIMENTS //Journal of Modern Educational Achievements. – 2023. – T. 5. – №. 5. – C. 95-99.
24. Zarnigor J. MAIN ROLE OF HYGIENIC EDUCATION IN THE SYSTEM PRIMARY PREVENTION OF DENTAL DISEASES OF PATIENT //European International Journal of Multidisciplinary Research and Management Studies. – 2023. – T. 3. – №. 11. – C. 157-163.
25. Qizi J. Z. B. METHODS OF OPTIMIZATION OF TREATMENT OF PERIODONTAL DISEASES USING NEW TECHNOLOGIES //European International Journal of Multidisciplinary Research and Management Studies. – 2023. – T. 3. – №. 10. – C. 234-241.
26. Kobilovna B. Z., Rushana R. COMPARATIVE EVALUATION OF PARTIAL DENTURES WITH VARIOUS FASTENING ELEMENTS //Intent Research Scientific Journal. – 2023. – T. 2. – №. 9. – C. 98-103.
27. Qobilovna B. Z., Maxzuna U. Improvement of Providing Therapeutic Dental Care to Pregnant Women. Therapeutic and Preventive Measures //Eurasian Research Bulletin. – 2023. – T. 16. – C. 146-150.
28. Tavakalova Q. M., Qobilovna B. Z., Sarvinoz Y. Results of the Prevention Program Dental Diseases in School-Age Children //Eurasian Research Bulletin. – 2023. – T. 17. – C. 50-54
29. Jurabek T. D., Qobilovna B. Z. Principles of Prevention of Dental Diseases in Children in Modern Conditions //Eurasian Research Bulletin. – 2023. – T. 17. – C. 55-59.
30. Tavakalova Q. M., Qobilovna B. Z., Sarvinoz Y. Preventive Measures in the Treatment of Caries in School children //Eurasian Research Bulletin. – 2023. – T. 17. – C. 60-65