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EVALUATION OF THE EFFECT OF NON-REMOVABLE DENTURES ON THE CONDITION OF THE ORAL CAVITY

Akhmedov A.A., Ibodullayev R.

Samarkand State Medical University.

ANNOTATION

Orthopedic stomatological treatment involves not only replacing defects in dental rows or alveolar processes with prostheses but also preventing their further destruction or recurrence of the disease. Thus, a prosthesis is considered a therapeutic tool, the rational application of which allows for the implementation of therapeutic and preventive measures. Any prosthesis or orthopedic apparatus made from certain materials is, on the one hand, a therapeutic tool and, on the other hand, can manifest itself as an undesirable (adverse) effect. Orthopedic dental treatment is now widespread. This is due to the large number of patients with dental diseases: increased tooth wear, wedge-shaped dental defects, partial and full tooth loss, caries, and dentoalveolar anomalies.

Keywords: oral cavity, non-removable prosthesis, removable prosthesis, oral hygiene condition.

ANNOTATSIYA.

Ortopedik stomatologiya nafaqat tish qatorlari yoki alveolyar o‘simtalardagi nuqsonlarni protezlar bilan qayta tiklash, balki ularning keyingi yemirilishi yoki kasallikning qaytalanishining oldini olishni ham o‘z ichiga oladi. Shunday qilib, protez terapevtik vosita hisoblanadi, uning oqilona qo‘llanilishi terapevtik va profilaktik chora-tadbirlarni amalga oshirishga imkon beradi. Ma’lum materiallardan tayyorlangan har qanday protez yoki ortopedik apparat, bir tomondan, terapevtik vosita bo‘lsa, ikkinchi tomondan, nomaqbul (indutsirlangan) ta’sir sifatida namoyon bo‘lishi mumkin. Ortopedik stomatologik davolash hozirda keng tarqalgan. Bu quyidagi stomatologik kasalliklar bilan og‘rigan bemorlarning ko‘pchilikni tashkil qilishi bilan bog‘liq: tishlarning ko‘p yemirilishi, ponasimon tish nuqsonlari, tish qatorlarining qisman va to’liq yo‘qotilishi, karies va tish-jag‘ anomaliyalari.

Kalit so’zlar: og‘iz bo‘shlig‘i, olinmaydigan protez, olinadigan protez, og‘iz bo‘shlig‘i gigiyenasi holati.

АННОТАЦИЯ

В ортопедическое стоматологическое лечение включает не только замещение протезами дефектов зубных рядов или альвеолярных отростков, но и предупреждение их дальнейшего разрушения или рецидива заболевания. Протез, таким образом, рассматривается как лечебное средство, разумное применение которого позволяет осуществлять лечебные и профилактические мероприятия. Любой протез или ортопедический аппарат, изготовленный из тех или

иных материалов, является с одной стороны лечебным средством и с другой стороны - может проявить себя нежелательным (побочным) действием. Ортопедическое стоматологическое лечение в настоящее время получило широкое распространение. Это обусловлено большим количеством пациентов, имеющих стоматологические заболевания: повышенную стираемость зубов, клиновидные дефекты зубов, частичную и полную потерю зубов, кариес, аномалии зубочелюстной системы.

Ключевые слова: полости рта, несъёмный протез, съемный протез, гигиеническое состояние полости рта.

The relevance of the topic.

Ensuring the quality of dental care is considered by researchers as one of the priority tasks ofstate policy, which improves the quality of life of patients [1].

This fully corresponds to the need to optimize the methods of orthopedic treatment of patients with missing teeth in order to harmonize the patient's quality of life due to its dental components [3].

Restoring the integrity of the dentition contributes not only to the normalization of functions, anatomical–and morphological relationships and aesthetic norms, but also to the prevention of diseases of the gastrointestinal tract and the psychoemotional state of the patient [4].

The need for dental orthopedic treatment in Russia is approximately 92-94 % of the adult population. Analysis of sources of scientific information over the past 10 years shows that at the age of 30-35 years, about 35 % of the population have defects in the hard tissues of teeth and dentition, which require restoration with aesthetic fixed structures [16]. The need for dental prosthetics in the population aged 40-55 years is already 46-52 %, and after 56 years — 94 % [17]. Replacement of dentition defects is required in 70-80 % of dental patients who apply for prosthetics [5,6].

Therefore, one of the main tasks of modern orthopedic dentistry remains the rehabilitation of patients with dental defects [7], which are considered one of the most common forms of damage to the dentoalveolar system [4].

The period of use of permanent dentures is very important. According to literature data in the United States, the average useful life of fixed structures is 8.3 years, and the maximum useful life of metal-plastic crowns is 14.3 years.

The analysis carried out in Russia gives the following indicators: the average period of use of fixed structures is 5.8 years, of which bridge — like structures are 4.8 years, and single structures are 6.3 years. These indicators are significantly worse than in developed countries [9].

The obtained literature data indicate the urgent need to optimize the restoration of defects in hard tissues of teeth and dentition rows, and to progressively improve the quality of orthopedic dental treatment.

The urgency of finding ways to optimize dental orthopedic care is due to the significant number and severity of complications that occur in 2.5-11.7 % of cases [8,9].

One of the main tasks of orthopedic dentistry is to study the factors that lead to complications and develop methods for their elimination.

Complications — a pathological process and condition that is pathogenetically related to the underlying disease, but does not form qualitatively different clinical syndromes, morphological and functional changes from its main manifestations. Complications can be caused by diagnostic and therapeutic procedures, excluding medical errors [9].

Today, the use of bridge-like prostheses causes a number of complications that lead to the destruction of the maxillary system and tooth loss [10].

Complications may occur during or after treatment of the dentition defect with fixed denture structures [11]. It is a well-known fact that non-removable metal-ceramic bridge structures of prostheses show the highest percentage of complications – 27 %, while plastic – lined bridges – 26%, single crowns – 11%, and root tabs-10%. Only 8% of complications occur when using full ceramic crowns [10,11].

The causes of complications are a number of factors, such as a violation of the technology of manufacturing bridges, insufficient and sometimes inappropriate preparation of a partial defect for prosthetics with bridges [12]. Due to inattention to the biomechanical properties of the prosthesis and the material from which it was made, errors occur in prosthetics with fixed bridge structures [10].

The following complications are most typical for artificial crowns (single, group, and supporting bridges) [9]:-caries (cervical or under the crown);-pulpitis or pulp necrosis with subsequent apical periodontitis;-diseases of the marginal periodontium; -defects in the lining (cracks, chips, breaks); -premature violation of fixation.

The most common causes of complications in the mouth and the unsuitability of fixed structures are considered to be inflammatory processes, caries and its complications (16,4–25,2 %) [2], thermal burns of the pulp (4.3%) [4], cementation of the supporting crowns (8-21 % of all complications). These processes are more likely to develop in the area of the edge of artificial crowns and are caused by the destruction of the cement layer that fixes the fixed prosthesis. One of the typical complications of dental prosthetics, which often develops within the first year after the artificial crown is fixed, is the exposure of the root neck of the tooth due to gum recession [8].

The occurrence of cervical or secondary caries under an artificial crown was noted in 1.78 % of cases. This is higher than the average level of inflation (0.4%), but falls within the range of the given parameters (0-2. 7 %). The need for endodontic treatment is 4.63 %, in foreign literature (0-6%). Papillitis, gingivitis, and marginal periodontitis occurred in 1.07% of cases, compared to 0.6% in foreign researchers. In the long-term period up to 5 years, the average parameters of the marginal periodontal lesion were equalized and amounted to 16.96%. Deep cracks, as well as chips and fragments of the cladding were found in 5.22% of cases.

The nature of pathological changes in the pulp during preparation of supporting teeth is influenced by a number of factors: the number of hard tissues removed, the shape and material of the dental instrument and the speed of rotation, the amount of moisture, the direction of water supply for cooling, and the duration of contact of the dental cutting tool with hard tooth tissues [11,12].

Objective of the study: hygienic assessment of the impact of dentures on the oral cavity and prevention of their harmful effects.

Research objectives:1. To study the chemical, bacteriological composition and lysozyme of saliva before and after prosthetics.2. To study possible changes in factors of the non-specific protective system in saliva after the completion of orthopedic treatment.3. To study the oral microflora of the oral cavity and local protection in patients with permanent dentures. 4. To study the frequency of inflammatory processes of the oral mucosa by the duration of their course after the completion of orthopedic treatment.

Materials and methods of research.To study the effect of complex methods of prevention and orthopedic treatment on the state of the oral mucosa after prosthetics in 130 patients treated in 2022-2024. Of these, 110 patients needed to have their prostheses reinstalled. The main group consisted of 54 people, of which 28 (51.9%) were men, the control group consisted of 56 people (30 men-53.6%) and the group without complications consisted of 20 people (13 men-43.4%). The lowest

number of patients fell in the age group under 35 years (11.5%, 14.3% and 23.3% for the main, control and non-complication groups, respectively). The largest number of patients (57.7%) in the main group were aged 55 to 64, while the control group showed a similar picture (55.4%). In the group without complications, the largest number of patients was the 35-54-year-old group (43.3%). All groups were comparable in gender and age. To determine the need for orthopedic treatment, a clinical and sociological survey of 110 patients was conducted in the polyclinic of the Samarkand regional Dentistry. In orthopedic treatment, the influence of preventive measures of physiotherapy on the course of recovery after prosthetics was studied. During the dental examination of patients, a survey, examination, palpation, and assessment of the periodontal condition and teeth were used. Data on the presence of common chronic diseases were also collected. We examined the visible skin, its turgor, the trajectory of the lower jaw, as well as palpation of the lymph nodes (submandibular and chin), the TMJ area when opening and closing the mouth. Partial or complete tooth loss was treated in 130 patients using removable and non-removable dentures. The distribution of patients by type of dentition defect is shown in Table 1.

Table 1
Distribution by type of dentition defect (130 people)

Defect type / Age	Up to 35 years	35-54	55-64	Total
Single -, double-ended	10 (7,2%)	12 (8,7%)	12 (8,7%)	34 (24,6%)
Single -, double-sided included lateral divisions	3 (2,2%)	7 (5,1%)	10 (7,2%)	20 (14,4%)
Included defects of the anterior dental arches	7 (5,1%)	4 (2,9%)	1 (0,7%)	12 (8,7%)
Combined defects	1 (0,7%)	4 (2,9%)	7 (5,1%)	12 (8,7%)
Jaws with singly set teeth	0 (0,0%)	19 (13,8%)	41 (29,7%)	60 (43,5%)
Total	21 (15,2%)	46 (33,3%)	71 (51,4%)	138 (100%)

Single and bilateral terminal defects were observed in 24.6% of patients who participated in the study, included defects of the lateral parts on one or both sides were found in 14.4% of patients, included defects of the anterior part of the dental arches, as well as combined defects occurred in 8.7% of cases, 43.5% had almost complete loss of teeth in one jaw.

Mucosal complications detected at the clinical stages of prosthetics were characterized by an acute or chronic inflammatory reaction. The condition of the SOPR after removing old prostheses and after fixing newly installed structures was studied. Acute inflammatory reaction was characterized by active hyperemia, swelling, deformity and violation of the integrity of the marginal gingival mucosa. This reaction was observed mainly after the prostheses were installed.The obtained data were statistically processed using the Statistica-7 application software package. The dissertation used methods of variational statistics that calculate the mean value (M), standard error (m), and relative values (frequency,%). The statistical significance of the differences between the obtained values was evaluated using the

Student's criterion (t). The differences were considered statistically significant at R≤0.05. Hygienic assessment of the influence of various dentures on the indicators of mixed saliva.

In the course of the study, individuals who applied to the SaMarkand regional Dental polyclinic for orthopedic dental care showed a high level of prevalence of pathological changes in periodontitis.

Table 2.
Intensity of signs of periodontal tissue damage in individuals depending on age

Sextants	Up to 35 years	old 35-54 years	old 55-64 years
old Healthy	1.5	1.0	1.0
Bleeding	2.2	2.7	2.5
Tartar	2.2	2.5	2.0
Periodontal pocket 4-5 mm	1.9	1.9	2.5
Periodontal pocket > 6 mm	0.8	1.0	0.8
Excluded	0.9	1.5	1.0

Table 2 shows that the number of sextants with healthy periodontitis was already 1.5 sextants, which is lower than the average epidemiological indicator for this group. Bleeding was observed in 2.2 sextants, tartar also in 2.2. In individuals of this age group, periodontal pockets with a depth of 4-5 mm (on average 1.9 sextants) and periodontal pockets with a depth of more than 6 mm (on average 0.8 sextants) were detected.

When studying the need for orthopedic dental care, it was revealed that in the age group up to 35 years, 47.0% of the examined people already had prostheses, and 32% needed prosthetics. In the age group of 35-54 years, 52.0% of the examined people already had prosthetics, and 67% needed prosthetics. In the age group of 55-64 years, 57.0% of the examined people already had prosthetics, and 83% needed prosthetics (Table 3).

Table 3
Need for orthopedic care in the examined patients (in %)

Age	Need prosthetics	Have prosthetics	Do not need prosthetics
Up to 35 years	32.0	47.0	68.0
35-54 years	67.2	52.1	33.0
55-64 years	83.0	57.0	17.0

A high level of caries intensity, untimely dental treatment, a large number of teeth removed and to be removed, determine a significant amount of required dental care, including orthopedic care. In this regard, it is important to determine the need for dental prosthetics in the examined patients. To assess the quality of previously provided orthopedic dental care to patients who applied for orthopedic dental care, we also analyzed data obtained during the examination of patients with dentures.

Table 4.
Number of dentures to be replaced depending on the period of use (%)

Terms of use	Prostheses to be replaced (%)

	Single crowns	Bridges	Partial removable dentures	Full removable dentures
1-2 years	5.0	7.1	2.8	5.2
3-5 years	3.9	12.8	9.1	9.3
6-9 years	17.5	18.1	7.1	10.6
10-15 years	8.1	10.3	6.9	9.1
Over 15 years	5.9	4.7	2.0	2.6
Total	40.4	53.0	27.9	36.8

When determining the quality and functional suitability of orthopedic structures, the duration of their use and patient complaints were taken into account. Data on the expiration dates of dentures available to the examined individuals are given in Table 4.

The results of the study showed that the need of the adult population of the republic surveyed in the manufacture of bridge prostheses is significantly higher than that of other orthopedic structures. The highest rate of need for bridges was found among older people. The data in Table 5 indicate that the demand for single crowns is also high and is most pronounced at a younger age.

Table 5.

Number of people who need to make dentures of various designs (%, per the number of people examined)

	up to 35 years	35-54 years	55-64 years	on average
Single crowns	47.1	29.7	10.5	87.3
Bridge prostheses	25.1	36	25.7	86.8
Partial removable	17.3	15	29.3	61.6
Full removable	10.5	19.3	34.5	64.3
Total for the number of examined	100	100	100	100

The need for partial and complete removable dentures increases significantly with age by 2 or more times. Thus, single crowns were required in 47.1% of patients under 35 years of age, 29.7% in those aged 35-54 years, and 10.5% in those aged 55-64 years. Bridges were needed in 25.1% of patients under 35 years of age, 36.0% of those aged 35-54, and 25.7% of those aged 55-64 years of age. Partial dentures were required in 17.3% of the patients under 35 years of age, 15.0% of those aged 35-54, and 29.3% of those aged 55-64. Complete removable dentures were required in 10.5% of patients under 35 years of age, in 19.3% of patients aged 35-54 years, and in 34.5% of cases aged 55-64 years . Mucosal hypertrophy in the main group was found in 7.7%, in the control group-in 10.7%. There were no significant differences in the prevalence of complications between the groups.

Table 6
Prevalence of clinical manifestations in the area of oral mucosa before prosthetics

Symptom	Main group		Control Group		Total (%)
	abs	%	abs	%	
Hyperemia	29	55.8%	32	57.1%	46.3
Edema	20	38.5%	24	42.9%	18.5
Cracks	1	1.9%	1	3.6%	2.8
Aphthae	0	0%	1	1.8%	0.9
Erosions, ulcers	4	7.7%	3	5.4%	6.5
Lichenoid lesions	1	1.9%	2	3.6%	2.8
Mucosal hypertrophy	4	7.7%	6	10.7%	

These prosthetics complications in patients admitted from other dental clinics were associated with: - incorrect choice of the prosthesis design; - incorrect modeling of the intermediate part of the prosthesis; - insufficient or absent prior to orthopedic preparation of the mucosa in the area of contact with the prosthesis.

In the control group, two cases of allergy to acrylates were recorded. Patients applied on days 5 and 7 after the prosthesis was installed with complaints in the first case of burning of the mucous membrane in the area of the prosthetic bed, weakness, in the second case-of burning in the tongue area, which passes when the prosthesis is removed at night.

Table 8
Number of relocations, timing of phonetic recovery, and number of early relocations

Group	Main	Control	Group without complications (newly installed prostheses)
Number of relocations	0.4±0.2	2.0±0.1	0.6±0.3
Phonetic recovery period (days)	7±3 7 (±3)	30±5 30 (±5)	25±5 25 (±5)
Number of relocations	0.4±0.2	8±0.2	0.6±0.3

In the late control period (up to 3 months), the main group did not show any new symptoms of complications from SOPR, while in the control group, 5 patients underwent an additional 1 to 2 adjustments of the prosthesis due to a feeling of severe discomfort when eating. In the group with primary prosthetics, the clinical picture in the period from 1 to 3 months, as well as in the main group, did not change.

Thus, as a result of this study, it was found that the use of physiotherapeutic methods of influencing the SOPR before installing the prosthesis and for two weeks after it significantly facilitates the process of adaptation to the prostheses, which is expressed in shortening the time for completing complete braking, as well as in reducing the number of adjustments to the prosthesis and reducing the probability of its replacement. This effect is also expressed in a decrease in the frequency of cases of reflex nausea, allergic reactions, faster recovery of phonation functions and quality of life in general.

In the course of a clinical study, it was found that the response to prosthetics is significantly mitigated during physiotherapy preventive measures.

In the control group, two cases of allergy to acrylates were recorded. Patients applied on

days 5 and 7 after the prosthesis was installed with complaints in the first case of burning in the area of the prosthetic bed, weakness, in the second case-of burning in the tongue area, which passes when the prosthesis is removed at night.

In patients of the main group, after orthopedic treatment, the effect of preventive procedures persisted for a long time, and no cases of allergies were detected.

The absence of significant differences ($p > 0.05$) between the main group and the group without complications indicates that the use of comprehensive prevention of complications of SOPR eliminates risk factors, if any.

According to the indicator of the presence of inflammation after the prosthesis is installed, complex treatment expands the sample in which orthopedic dental treatment is applicable.

Thus, according to the clinical examination, the result of orthopedic treatment of patients in the main group was a complete adaptation to the installed prostheses.

There was also no difference in the assessment of prosthetic functionality between the subjects of the main and non-complication groups.

CONCLUSION

The use of complex prophylaxis before and during the first two weeks after the prosthesis installation shortens the period of adaptation to the prosthesis by 3 days compared to the control (30 (±0.7) and 33.5 (±0.4) days, respectively).

The use of this method of prevention after prosthetics on the part of the SOPR in the group of patients with repeated prosthetics significantly reduces the number of further adjustments-from 2.0 (±0.1) to 0.4 (±0.2), thereby reducing the probability of replacement of the prosthesis.

The use of darsonvalization and ozone therapy as a preventive technique reduces the incidence of complications after complete removable prosthetics of the upper jaw in the form of reflex nausea by more than two times (from 23.1% to 9.1%).

When comprehensive preventive measures are applied, the quality of life associated with dental health is doubled (according to the OHIP-14 questionnaire). At the same time, these indicators are comparable to those of the group with complete absence of complications after primary prosthetics ($p>0.05$).

REFERENCES| СНОСКИ | IQTIBOSLAR:

1. Asrorovna, X. N., Baxriddinovich, T. A., Bustanovna, I. N., Valijon O'g'li, D. S., & Qizi, T. K. F. (2021). Clinical Application Of Dental Photography By A Dentist. *The American Journal of Medical Sciences and Pharmaceutical Research*, *3*(09), 10-13.
2. Bustanovna, I. N. (2024). Hygienic Assessment of The Condition of The Oral Mucosa After Orthopedic Treatment. *International Journal of Scientific Trends*, *3*(3), 56-61.
3. Bustanovna, I. N. (2024). Complications Arising in the Oral Cavity after Polychemotherapy in Patients with Hemablastoses. *International Journal of Scientific Trends*, *3*(3), 62-66.
4. Bustanovna, P. I. N. (2024). Further Research the Features of the Use of Metal-Ceramic Structures in Anomalies of Development and Position of Teeth. *International Journal of Scientific Trends*, *3*(3), 67-71.
5. Ghasemi Darestani, N., Gilmanova, A. I., Al-Gazally, M. E., Zekiy, A. O., Ansari, M. J., Zabibah, R. S., ... & Akhavan-Sigari, R. (2023). Mesenchymal stem cell-released oncolytic virus: an innovative strategy for cancer treatment. *Cell Communication and Signaling*, *21*(1), 43.
6. Islamova N. B., Sh N. N. STUDY OF CHANGES IN PERIODONTAL DISEASES IN POST-MENOPAUSAL WOMEN //Conferences. – 2023. – C. 15-17.

7. Islamova, N. B. (2022). CHANGES IN PERIODONTAL TISSUES IN THE POSTMENOPAUSAL PERIOD. In *Стоматология-наука и практика, перспективы развития* (pp. 240-241).
8. Pallathadka, H., Khaleel, A. Q., Zwamel, A. H., Malathi, H., Sharma, S., Rizaev, J. A., ... & Jawad, M. A. (2024). Multi-Drug Resistance and Breast Cancer Progression via Toll-Like Receptors (TLRs) Signaling. *Cell Biochemistry and Biophysics*, 1-16.
9. Fakhriddin, C. H. A. K. K. A. N. O. V., Shokhruh, S. A. M. A. D. O. V., & Nilufar, I. S. L. A. M. O. V. A. (2022). ENDOKANAL PIN-KONSTRUKSIYALARNI ISHLATISHDA ASORATLAR VA XATOLAR TAHLILI. *JOURNAL OF BIOMEDICINE AND PRACTICE*, *7*(1).
10. Rizaev, J. A., Nazarova, N. S., & Vohidov, E. R. (2024). HOMILADOR AYOLLARDA PARODONT KASALLIKLARI RIVOJLANISHINING PATOGENETIK JIHATLARI. *Журнал гуманитарных и естественных наук*, (11 [2]), 104-107.
11. RIZAEV, J., & KUBAEV, A. (2020). Preoperative mistakes in the surgical treatment of upper retro micrognatia. *International Journal of Pharmaceutical Research (09752366)*, *12*(1).
12. Kizi, J. O. A., & Bustanovna, I. N. (2024). FAMILIARIZATION WITH THE HYGIENIC ASSESSMENT OF THE CONDITION OF THE ORAL MUCOSA IN ORTHOPEDIC TREATMENT. European International Journal of Multidisciplinary Research and Management Studies, 4(05), 89-96.
13. Ugli, A. A. A., & Bustanovna, I. N. (2024). STUDY OF THE CONDITION OF PARODONT IN PERIODONTITIS IN FETAL WOMEN. European International Journal of Multidisciplinary Research and Management Studies, 4(05), 149-156.