THE REPUBLIC OF AZERBAIJAN

on the right of a manuscript

ABSTRACT

of the dissertation for work for the degree of Doctor of Philosophy

EFFECTIVENESS OF COMPLEX ORTHOPAEDIC TREATMENT IN PATIENTS WITH OCCLUSAL ANOMALIES AND TEETH ROW DEFECTS

Specialty: 3226.01 – Dentistry

Field of science: Medicine

Applicant: **Goncha Ilham Bayramova**

Baku – 2025

This dissertation was carried out at the Department of Orthopedic Dentistry at Azerbaijan Medical University.

Scientific Supervisor:	honored doctor, doctor of medical sciences, professor **Nazim Adil Panahov**
Official Opponents:	doctor of medical sciences, associate professor **Ramida Vagif Shadlinskaya**
	doctor of medical sciences, associate professor **Ziba Vagif Gasimova**
	doctor of philosophy in medicine **Rauf Mehrali Jafarov**

Dissertation Council ED 2.50 of the Supreme Attestation Commission under the President of the Republic of Azerbaijan, operating on the basis of the Azerbaijan Medical University.

Chairman of the Dissertation Council:	Doctor of medical sciences, professor **Vafa Mustafa Panahian**
Scientific Secretary of the Dissertation Council:	Doctor of Sciences in Medicine, professor **Aga Chingiz Pashayev**
Chairman of Scientific Seminar:	Doctor of Sciences in Medicine, professor **Rena Kurban Aliyeva**

İMZANI TƏSDİQ EDİRƏM
Azərbaycan Tibb Universitetinin
ELMİ KATİBİ
Tibb üzrə fəlsəfə doktoru, dosent
Rəşad Şəmsəddin oğlu Talışınskiy
"24" 04 2025 il

GENERAL CHARACTERISTICS OF THE WORK

The relevance of the topic and degree of development.

In secondary partial adentia (SPA), the clinical presentation of anomalies and deformations of the dento-mandibular system is varied and occurs over a specified period of time after teeth removal.

In secondary partial adentia, the patients most frequently present not only anomalies and deformations of the dento-mandibular system, but also deformations of the occlusal surfaces, irregularities and deformations of the teeth row (TR), changes in the position of the teeth, particularly complications in the molar teeth.[1, 2]

In the modern stage of orthopedic stomatology development, optimal restoration of the disturbed function of the maxillomandibular-facial system in patients of all age groups is considered an actual medical and social problem.[3]

Depending on the complexity of the clinical picture of occlusal anomaly (OA) and TR defect, the rehabilitation of the patient requires the participation of qualified specialists - orthopedic dentists, orthodontists, maxillo-mandibular surgeons and periodontists.[4]

Factors that directly influence teeth loss and the development of SPA include socio-economic factors, financial scarcity and low levels of education [5].

---

[1] Novruzov Z.H. The effect of modified twin block and Frenkel devices used in the treatment of distal teeth on the stomatognathic system // Azerbaijan Journal of Medicine, 2019, No. 4, pp. 95-99.

[2] Vorobeva N.A., Kunavina K.A., Golubovich A.V., Vorobeva A.I. Dental health of the native ethnic group of Vaigach island of the Arctic zone of the Russian Federation // Human ecology, 2021, No. 4, p. 25-29.

[3] Kulakov A.A., Andreeva S.N. Organizational and legal aspects of the provision of dental care with the use of implants based on the analysis of judicial law enforcement practice // Stomatology, 2019, No. 1, pp. 4-10.

[4] Arkhangelskaya A.S. Peculiarities of the dynamics of clinical and psychological characteristics in patients with dento-jaw anomalies at the stages of orthodontic treatment // Psychic health, 2017, No. 6, p. 28-37.

[5] Muradov M.A. Axial method of preparation of abutment teeth during prosthetics with multi-support structures // Stomatology, 2018, No. 3, p. 54-55.

Orthopedic treatment (OT) of TR with fixed prosthesis design (FPD) represents the largest part of orthopedic care among 36–55-year-olds and makes up 85.4%.[6]

Based on the results of our studies[7], in 35.0% of cases, diagnosis made does not correspond to the clinical and diagnostic condition recorded in the patient's examination card, which is considered a serious fault leading to the occurrence of serious complications.

Doctor incompetence, resulting in diagnostic failures, improper assessment of the patient's general condition and inability to choose an adequate method of treatment, leads to unsatisfactory treatment and a low level of medical care.[8]

Depending on the severity of the anomaly and the deformity that occurred during SPA, performing OT becomes more complicated. In such cases a comprehensive approach to the issue and orthodontic treatment is required.[9]

Hence, the analyzed and researched foreign references had no information about orthodontic preparation (OP) of patients of different ages during SPA before prosthetics according to their socio-demographic characteristics, reasons for failure of orthodontic treatment in different age groups and comparative characteristics of its results.

The object and subject of the study.

A total of 184 patients with diagnosed SPA of the TR who required OT with fixed prosthetic construction (defect class III

---

[6] Wagner V.D. Effectiveness of modular technologies of reconstructive dental therapy in terms of the quality of life of a dental patient // Institute stomatology, 2018, No. 1, pp. 42-44.

[7] Stafeev A.A. Stomatological materials // Economy and management, 2021, No. 3, pp. 25-27.

[8] Porfiriev BN, Shirov AA, Yanushevich OO, et al. Development of Subsidized Prosthodontic Care: Socio-Economic Problems and Opportunities // Studies on Russian Economic Development, 2023, №1, p.68-76.

[9] Grzhibovsky A.M., Gvozdetsky A.N. Interpretation of the value of p and alternatives to its use in biomedical studies // Human Ecology // 2022, No. 3, p. 209-218.

according to the Kennedy classification) were included in the study. To 72 patients with defects of OA and TR was performed a dental examination of OT with FBPD with the aim of comprehensive OT.

Aim of the study: The aim is to improve the efficiency of orthopedic treatment of patients with dento-mandibular anomalies and occlusal disorders.

The study objectives:

1. Studying the necessity of complex orthopedic treatment in patients with teeth row defects and occlusal anomalies;

2. Retrospective studying of orthopedic treatment performed in patients with defects of dental/teeth rows and occlusal anomalies in secondary partial adentia;

3. Determination of indications for complex orthopedic treatment in patients with defects of dental rows and occlusal anomalies.

4. Determination of the effectiveness of complex orthopedic treatment in patients with defects of dental rows and occlusal anomalies (comparison of the state of dental rows and occlusion before and after treatment);

5. Studying the reason for orthopedic treatment with a bridge-like prosthetic construction that doesn't exit without elimination of the dental row defect and occlusion anomaly in secondary partial adentia.

The study methods:

- Medical records of a dental patient (form №043/U). Were analyzed the dental medical records of 182 patients who were treated with fixed orthopedic constructions.

- Usage of questionnaires for orthopedic dentists (Nizhny Novgorod State Medical Academy-RF), prepared at the Department of Orthopedic Dentistry.

- Clinical studies and special examination methods, analytical methods.

Main provisions for the defense:

- Specific features of stomatological status in secondary partial adentia;

- Dependence of orthopedic treatment in secondary partial adentia on the socio-demographic status of the patient;

- Identification of indication for orthopedic treatment of secondary partial adentia in the presence of teeth row defects and occlusal anomalies;
- Justification of complex orthopedic treatment in patients with defects of teeth rows and anomalies of occlusion in secondary partial adentia;
- Comparative evaluation of complex orthopedic treatment of patients with dental/teeth row defects and occlusal anomalies in secondary partial adentia.

The scientific novelty of the study:

- In secondary partial adentia, the normal physiological relationships of the teeth row are disturbed and due to the additional pathological load on the teeth occur occlusal anomalies and deformities of the teeth row. To solve the problem, it is essential to conduct comprehensive orthopedic treatment.
- -In patients with teeth row defects and occlusal anomalies in secondary partial adentia, an algorithm of complex orthopedic treatment has been developed depending on the distance between the relative position of the jaws and the position of the central occlusion and facial angle.

Practical significance of the study.

The basis of the scientific work is the actuality of complex orthopedic treatment of patients aged 22-56 years with occlusal anomalies and defects of the teeth row.

Methodological guidelines for complex orthopedic treatment of patients with teeth row defects and occlusal anomalies will assist in selecting a method of orthodontic preparation before treatment.

Approbation.

I International Conference of Oral and Maxillofacial Surgeons of Azerbaijan (Baku, 2019); Scientific conference dedicated to the 75th anniversary of the birth of Doctor of Medical Sciences Azam Tayyar oglu Agayev (Baku, 2019); XII International Scientific Conference 'Development of science in XXI century' (Germany, 2024); International Scientific and Practical Congress 'Actual problems of medicine' (Baku, 2024); Scientific Conference dedicated to the 128th

anniversary of outstanding statesman and scientist Aziz Aliyev (Baku, 2025).

The preliminary discussion of the dissertation took place during the meeting No. 42 of the Department of Orthopedic Dentistry of Azerbaijan Medical University on July 3, 2024, and also during the meeting No. 11 of the Scientific Seminar of the ED 2.50 Dissertation Council of AMU on November 1, 2024.

Application of work results to practice.

The results of the dissertation work were integrated into the educational process of the Orthopedic Dentistry Department of AMU, as well as in the treatment process of the Dental Education Clinic.

The organisation where the dissertation work was performed. Department of Orthopedic Dentistry of Azerbaijan Medical University.

Publications.

On the subject of the thesis 10 scientific works were published, including 6 articles (2 abroad) and 4 theses (1 abroad).

Volume and structure of the dissertation.

Dissertation is presented in the computer text on 213 pages (229.800 characters) and consists of introduction (9.600 characters), literature review (33.000 characters), materials and methods of research (22.100 characters), chapter III (45.200 characters), chapter IV (48.800 characters), conclusion, results, practical recommendations (71.100 characters). List of bibliography includes 232 sources. The dissertation includes 32 tables, 22 figures and 27 graphs.

MATERIALS AND METHODS OF THE STUDY

To address the goals and objectives of the study, 184 patients with a diagnosis of SPA of teeth row requiring OT with fixed prosthetic construction (defect class III according to the Kennedy classification) were included in the study. The patients were aged 22-56 years of both sexes.

Among these 184 patients, 112 had undergone OT using FBPDs prior to our investigation. Their medical records were analyzed.

However, some of them required repeat OT for various reasons. The distribution of patients by age and sex is presented in Table 1.

112 patients with fixed bridge prosthetic constructions were treated with prosthetic FBPD at the AMU Dental Education Clinic in 2015-2019. The lifespan of the fabricated prosthetic construct ranged from 1 to 5 years. There was clinical evaluation of the quality of OM. Some of them required repeated OT for various reasons. Among them, we have included in the investigation the comparison group indicators of 32 patients treated in accordance with the inclusion and exclusion criteria.

Table 1.

Separation of patients into subgroups by age and sex

Age groups			
22-35		36-56	
Men	Women	Men	Women
1-subgroup	3-subgroup	2-subgroup	4-subgroup
n = 14	n = 16	n = 22	n = 20

Dental check-up is started by interviewing the patient and collecting complaints, which are recorded in the patient's outpatient record. In the course of anamnesis collection, are studied the cause and duration of teeth loss, the duration of usage of the completed orthopedic construction, diseases the patient has suffered or has, and allergic status. The results obtained are recorded in chart № 043/U.

At external examination, were assessed the facial configuration, severity of the nasolabial and submandibular folds, height of the lower 1/3 of the face, magnitude and severity of height reduction. This was considered important information to continue the diagnosis and the OT method.

In additional evaluation to assess the condition of the molars using plaster models of the jaws, the control and diagnostic models of 72 patients before treatment and 72 patients after treatment were studied in the research work.

TR jaw dimensions were measured with alginate measuring material. The models were cast from medical plaster, and the wax base was transferred to the articulator using an occlusal cushion to determine the primary occlusal relationships.

We studied diagnostic models prepared from measurements taken prior to OMT using FPD SPA. A total of 144 jaw models were studied.

For this, a longitudinal line was drawn with a pencil from the vestibular surface of the molars towards the base of the model. Then a horizontal line was drawn on the model at a distance of 1 cm from the lower edge of the tooth neck, connecting the longitudinal axes drawn on the teeth, and the center of each of these lines was marked and defined by a point (Fig. 1).

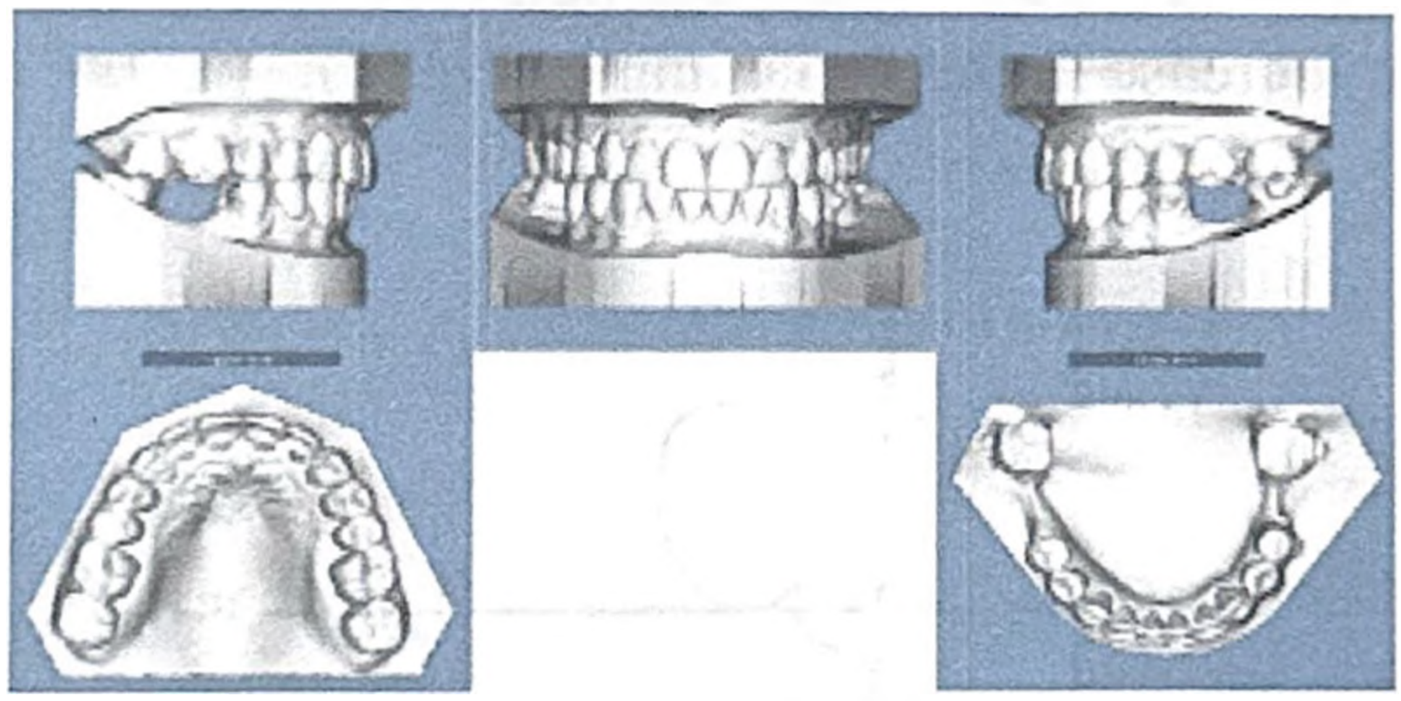

Figure 1. Mutual positioning of the maxilla and jaw models

The status of teeth bordering the defect during SPA was assessed by the dynamics of normalization of angles approaching 90°. Method of defining the condition of teeth bordering the defect during SPA provided information about the degree of dentoalveolar deformation before OT and normalization of the abutment teeth at the end of treatment.

The method of occlusography was used to study the relationships of the teeth during complex OT SPA.

Depending on the duration of the SPA, the occlusion state is disturbed. The facial angle (FH-NPg) is the angle formed by the intersection of a straight line connecting the Frankfurt horizontal and

NPg points. A decrease in the height of the lower 1/3 of the face leads to an increase in the facial angle (Fig. 2).

During SPA, the OT with the FBPD in patients with DS defect and OA consisted of a sequence of clinical and laboratory stages.

Clinical stage 1: Diagnosis was made using the main (subjective, objective examination) and additional (occlusography, model analysis, facial angle, relative calm and distance between CO) examination methods, planning the treatment to be performed, and performing OP accordingly. OP lasted up to 12 months.

Depending on the duration of SPA, the status of occlusion is disturbed. The facial angle (FH-NPg) is the angle formed by the intersection of a straight line connecting the points of the Frankfurt horizontal and NPg. Decreasing the height of the lower 1/3 of the face leads to an increase in the facial angle (Fig. 2).

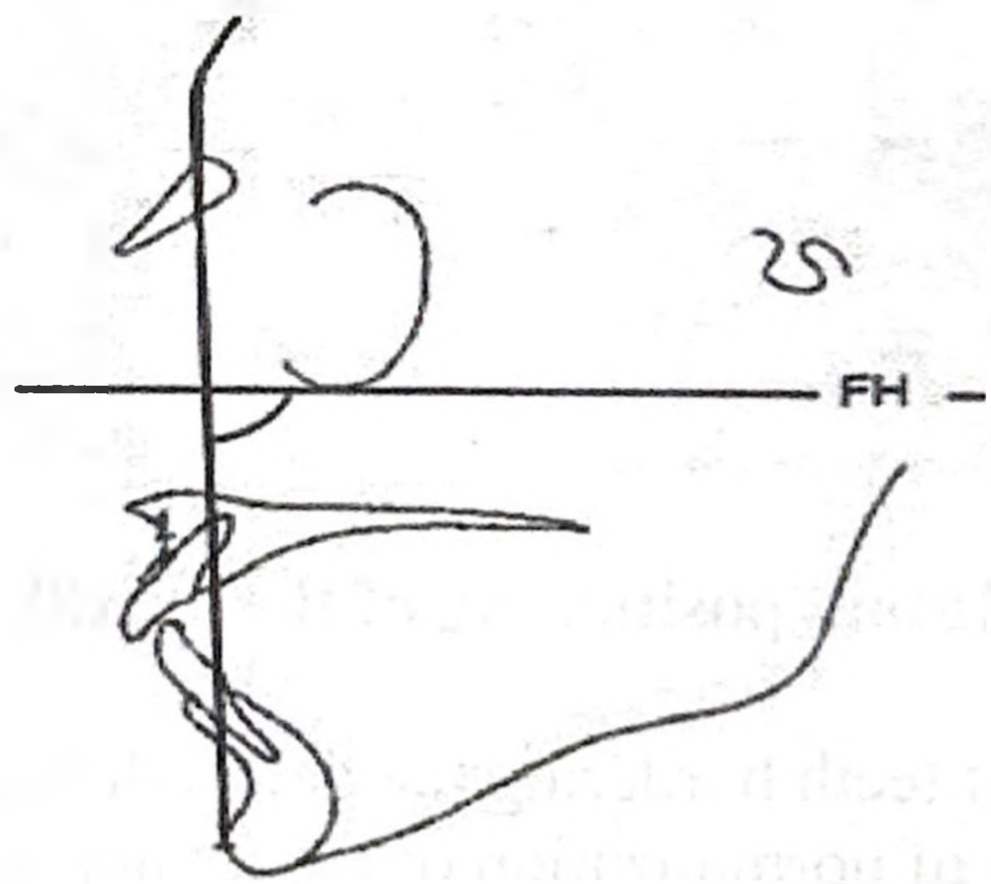

Figure 2. Face angle.

In conducting SPA OT with FPD in patients with TR defect and OA consisted of a sequence of clinical and laboratory steps.

Clinical stage 1: Using basic (subjective, objective examination) and supplementary (occlusography, pattern analysis, facial angle, relative tranquility and CO distance) examination methods, they established the diagnosis, planned the treatment and performed OP accordingly. The duration of OP was up to 12 months.

Subsequently, the molars are trimmed, the gingival retraction is performed, measurements are taken (A silicone), the central jaw relationship is determined, and the temporary denture is prepared.

Clinical step 2: Placement of the metal framework of the prepared FBPD on the molars and determination of the ceramic veneer color.

Clinical Step 3: Placement of the prepared FBPD on the molars, check of relative stability and CO, correction of occlusion.

Clinical Step 4: Temporary fixation of the FBPD, testing and permanent fixation of the FBPD.

To evaluate the social characteristics of patients and to objectively study the clinical and socio-psychological features of patients during SPA, a social questionnaire was used. The structure of the social questionnaire is as follows:

1. The passport part reflected sex, date and place of birth, place of residence, nationality, place of work, profession, position and professional habits of the patient.

2. The social characteristic contained information about the level of education, nature of labor activity, housing conditions, marital status, nutritional features, nature of bad habits, frequency of seeking medical (dental) care according to the socio-demographic characteristics they belonged to.

Clinical and social data were collected before the initial clinical examination. To evaluate the level of organization of the treatment and diagnostic process of orthopedic dental care, we studied the training level of orthopedic dentists and 61 specialists of various ranks at the AMU Dental Education Clinic. The age of the survey participants ranged from 40 to 60 years, and work experience ranged from 20 to 40 years.

The questions were based on a questionnaire designed and compiled by the Department of Orthopedic Dentistry, Nizhny Novgorod State Medical Academy (RF), and a total of 46 questions were asked. There were different answers to each question.

First 11 questions provide information about the doctor's specialization, medical experience and medical degree. In addition, they clarify the basic specialized education and whether the doctor has

additional advanced training. Following 15 questions are related to the doctor's maintenance of a dental patient's medical record.

Next 14 questions of the questionnaire reflect the level of professionalism of the doctor when performing OT of a patient with fixed construction. The remaining 6 questions relate to the relationship between the doctor and the medical institution.

To study the quality of medical document preparation, where the results of examination and treatment of SPA in OT FBPD are recorded, were analyzed the dental records of 184 dental patients treated with the diagnosis of SPA at the AMU Educational Dental Clinic in 2015-2020.

Analysis was performed using statistical methods. Research plan was drawn up: 1. Material collection; 2. Table making on the collected material; 3. Results analyzing and obtaining.

The obtained results were analyzed with the help of SPSS-26 package using methods of variation (U-Mann-Whitney, H-Kruskal-Wallis tests), dispersion (ANOVA test), discriminant ($\chi 2$-Pearson test) analysis. When $p<0.05$, the hypothesis "0" was rejected.

THE STUDY RESULTS AND THEIR DISCUSSION

Based on the results of medical records, we evaluated the quality of OT with a FBPD during the SPA period.

To study the quality of OT performed with fixed bridge prosthetic construction, we reviewed and analyzed 184 dental patient charts (Form 043/U) prepared by orthopedic dentists at the AMU Dental Education Clinic in 2015-2018.

Quality was estimated based on the compilation of the medical document, the correctness of filling out all lines and sections of the medical document, and error record, as well as the performed orthopedic treatment with the use of FPD with the most common in dental practice.

The primary medical documentation analysis showed that when patients were treated by dentists of the orthopedic department, form № 043/U - a medical document of a dental patient, naturally, a passport part of a dental patient's medical card was filled in by a registrar, and

the medical part was filled in by a doctor-dentist. Thus, it was considered that errors and their compilation can occur both at registration and at the stage of diagnosis, planning and treatment by the attending physician. Therefore, the mistakes encountered consist of errors made by the registrar and the physician.

Considering the above-mentioned, we studied the correctness of compilation of the specified items of the patient's medical dental record and, to characterize the identified errors, we divided them into four groups: technical, methodological, diagnostic and treatment.

During the first visit of the patient to the clinic, the registrar of the dental facility fills out the passport part of the medical card on the basis of the patient's identity document. In all the cards, the registrar of the dental facility clearly and completely marked the marks in the passport part.

Medical part of the primary medical record was filled out by a dentist-orthopedist, and all stages from the initial examination to the final stage of rehabilitation were clearly and completely marked.

External line of sight was clearly marked. On dental examination, the lower 1/3 of the face was clearly marked due to the patient's tooth loss, and the shape of the face was clearly marked.

The condition of the oral mucosa, gums, and incisors was specified by the objective examination and fully recorded in the appropriate section of the primary medical record.

The results of the objective examination of the patient's oral cavity were then recorded in the primary medical record as a medico-legal document.

It was not found in any of the case histories reviewed that an OP was performed, and treatment was initiated when OT was planned during the SPA prior to treatment.

Thus, the analysis of medical records showed that the identified shortcomings, both at the diagnostic stage and at the treatment stage, resulted in a reduced quality of the performed OT and the occurrence of complications.

For the purpose of studying the prevalence of SPA in middle-aged patients and the influence of lost teeth on TR and occlusion, we conducted an epidemiological survey of 72 patients, including 36

patients with permanent teeth aged 22 to 35 years and 36 patients with permanent teeth aged 36 to 56 years.

In the first age group (22-35 years), OA was observed in 24 patients (33.3%) and in the second group (36-56 years) in 28 patients (38.9%). In comparing the number of lost teeth in these age groups, it was revealed that the number of lost teeth increased with age. The number of patients with small and medium-sized dental defects increased especially sharply. None of the examined patients in the age group 22-35 years had orthopedic constructions in the teeth row. Of the patients in the age group 36-56 years, 24 (33.3%) had a prosthetic construction in the oral cavity. At the same time, the root tooth had lost its functionality and could not be restored, so it was extracted and the structure required renewal.

TR anomalies and deformities during SPA were detected in 32 (44.4%) patients in the first age group, in 30 (41.7%) patients in the second age group. They were detected in the mandible in 36 (50.0%) patients in the first age group and in 32 (44.4%) patients in the second age group.

Thus, as a result of the epidemiological study, it became evident that the number of molars and premolars that have fallen out of the TR increases with increasing age of the patient under the influence of etiological factors. The number of TR anomalies increases with age.

The TR defect in SPA is formed of extraoral and intraoral signs characterizing changes in the patients' appearance. The external examination of the patients showed that most of the patients had sharply pronounced nasolabial and submandibular skin folds. Comparison of visual signs and objective parameters of the lower 1/3 face height reduction showed that they were absent in 55.6% of men and 52.8% of women, respectively, and present in 44.4% of men and 47.2% of women.

The TR defect had various topography and size in the examined patients. In case of a small TR defect, the size of the defect area consisted in the loss of up to 1-3 teeth, in case of a medium defect - up to 4-6 teeth, and in case of a large defect - more than 6 teeth. So, the size of a TR defect is not limited by the number of teeth on one jaw. Small TR defect was found in 52.8% of cases in upper teeth and 54.8%

in lower teeth. Medium defect occurred in 34.0% of cases in upper teeth and 35.4% in lower teeth, respectively. Patients with large TR defect were not included in the study. According to TR defect type, the frequency of occurrence in patient subgroups by age and sex was 55.6% in males, 52.8% in females, small defect was 44.4% in males, and medium defect was 47.2% in females.

The results of interposition of teeth, dental arch, alveolar arch, TR, and occlusal surface deformity were also analyses during the study of diagnostic models of the jaws.

Depending on the duration of SPA, in most cases the antimineral teeth were located in an asymmetrical position. There was observed asymmetric displacement of teeth in the dental arch towards the defect, bending in the mesial and distal directions. (Fig. 3).

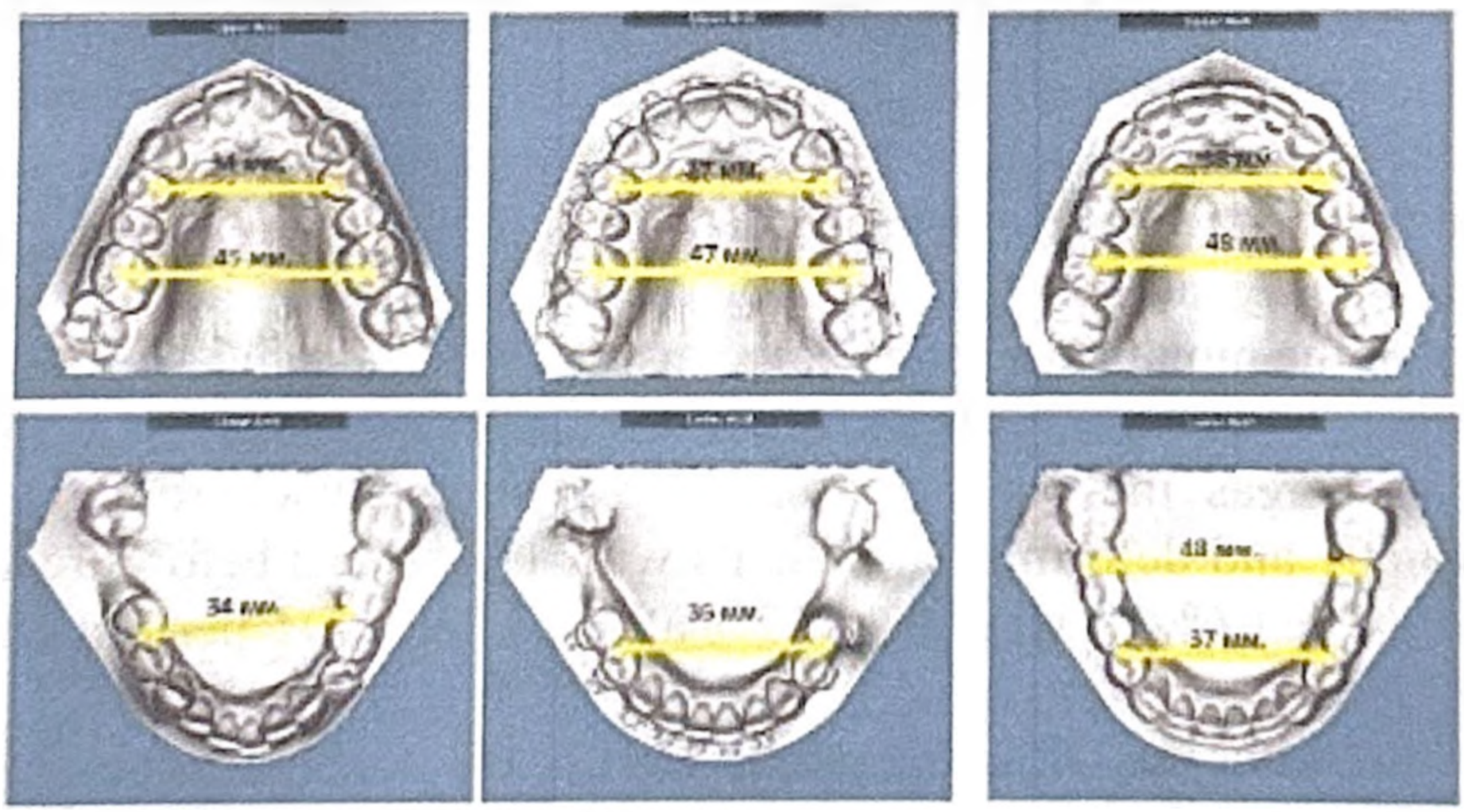

Figure 3. Models before and after treatment.

According to the study of diagnostic and control models of the jaws, the average value of angles between the longitudinal axis of the molars and the average tilt axis, filmed on a parallelogram, at the beginning of treatment in patients of the first subgroup of the first age group was 42±0.5°, in the second subgroup - 44±0.5°, in the first subgroup of the second age group - 38±0.65°, in the second subgroup - 40±0.5°. After OP, the mean value of the difference of angles in

patients of the first subgroup of the first age group was 2±0.4°, in the second subgroup - 3±0.65°, in the first subgroup of the second age group - 1±0.5°, in the second subgroup - 2±0.65° (Fig. 4).

Figure 4. Tooth row before and after orthopedic treatment.

After comprehensive OT, the mean value of the angle difference in the patients of the first subgroup of the first age group was 1±0.45°, in the second subgroup - 2±0.5°, in the first subgroup of the second age group - 1±0.3°, in the second subgroup of the second age group - 2±0.65°. Dynamics of normalization of the position of the longitudinal axis of the molars due to the defect using control diagnostic models of patients by age groups is shown in this paper (Fig. 4).

Whereas the occlusal relationship on the background of TR anomaly and deformity in patients with TR defects before treatment was 14.3±1.6%, it was 28.3±2.2% after complex OT performed after OP.

So, after the OP in the preparation of the prosthetic construction, the disturbed fissure-bump relationships of the teeth were normalized, pathological contacts formed during mandibular movements were eliminated, which had a positive effect on the articulatory movements of the mandible. As a result of the analysis of orthopantomograms made before OT, the average value of the angles formed by the longitudinal axis of the root teeth and the lines connecting the Go points in the first subgroup of patients of the first age group was 74±0.65°, in the second subgroup - 76±0.5°, in the first subgroup of the second age group - 73±0.65°, in the second subgroup - 75±0.45°. After comprehensive OT with OP, the significant change in mean

angle values was 87±0.75° in the first subgroup of the first age group, 88±0.65° in the second subgroup, 88±0.65° in the first subgroup of the second age group, and 89±0.45° in the second subgroup. Orthopantomograms before and after OT showed the dynamics of normalization of abutment tooth position in patients of both age groups.

All patients included in the study (n=72) showed positive dynamics during and after the OP processes according to the results of clinical and additional methods of examination. Subjective assessment of patients was performed according to subjective results.

Relative anxiety and the state of jaw CO in the presence of TR defect and OA during SRA were studied and compared by age groups before and after treatment (Table 2).

Table 2

Indicators of bite before and after treatment of the mandible and jawbone

	≤ 35 age				> 35 age				P_U
	M	Me	Q1	Q2	M	Me	Q1	Q2	
Lost teeth in the mandible	2,9	2,5	1,0	4,0	2,5	2,0	2,0	4,0	0,566
Lost teeth in the jaw	2,8	2,0	1,0	4,0	2,4	2,0	1,0	4,0	0,558
NS-MO	4,8	5,0	4,0	6,0	4,5	5,0	3,0	5,0	0,539
NS-MO after	2,3	2,0	2,0	2,5	2,4	2,0	2,0	3,0	0,571
Facial angle	90,4	91,0	89,0	91,0	90,9	91,0	90,0	92,0	0,501
Facial angle after	85,7	86,0	85,0	86,0	85,9	86,0	85,0	87,0	0,537

Comparing the data revealed that during SPA the relative calm and CO states of the jaws in patients with TR and OA increased due to the deep occlusion of teeth in the anterior region and the loss of the 6th teeth, which is a key tooth in the dentition. Thus, the distance between the state of relative calm and CO was 3-6 mm before treatment and 2-3 mm after comprehensive OT. Accordingly, the facial angle was 88-92° before treatment and 84-88° after comprehensive OT. During the treatment period, the depth of incisal occlusion was significantly restored in all subgroups of patients. Thus, the depth of incisal occlusion before OT in the first subgroup was 2.94±0.35 mm, in the second -

2.47±0.50 mm, in the third - 2.92±0.35 mm, in the fourth - 2.45±0.50 mm. There was a positive trend in the depth of incisal closure after OP in the OT complex, which was 2.15±0.60 mm in the first subgroup, 1.90±0.38 mm in the second subgroup, 2.17±0.60 mm in the third subgroup, and 1.92±0.39 mm in the fourth subgroup.

After comprehensive OT, the depth of incisal occlusion decreased, the upper frontal teeth overlapped 1/3 of the lower frontal teeth, which is directly related to the change in the vestibular inclination of the upper and lower jaw incisors confirmed during treatment.

When TR and OA defects were present during SPA, there was a direct correlation between the relative resting distance and the CO condition of the jaws, and the number of teeth lost. As the number of extracted teeth increases, the distance between the relative calm and the CO of the jaws increases, i.e., the bite deepens. Thus, in 72 patients, OA was eliminated during OT. Furthermore, in the case of secondary TR deformity resulting from early teeth loss, optimal prosthodontic treatment was performed in 72 patients (100%). Also, in 72 patients (100%), the defect area was completely restored with a prosthetic design.

The socio-demographic characteristics of patients in the four subgroups by age and sex were analyses according to the items of the social questionnaire.

As a result of analysis of the questionnaire results, it was revealed that among the patients included in the study, 60.0% had higher education and 40.0% had secondary education. Thus, in most cases, the majority of those who requested orthopedic care had higher education, and the smallest number had secondary education. The same situation was reflected in the age-sex ratio of patients. Thus, in the first subgroup 11.6 % of patients had higher education, 7.8 % - secondary education. In the second subgroup, 18.4% of applicants had higher education, and 12.2% had secondary education. In the third subgroup 13.3% of patients had higher education and 8.9% had secondary education. In the fourth subgroup 16.7 % of the examined patients had higher education, and 11.1 % - secondary education. In terms of age groups, 55.6% of patients with higher education were men and 61.6% of women, and 44.4% of patients with secondary education were men and 38.9% of women.

Overall, 19.4% of patients included in the study did not work, whereas 25.0% of men and 41.7% of women worked, with 55.6% of men and 30.6% of women indicating that they worked more, i.e., more than 10 hours.

A person's level of employment corresponds to their level of income. Thus, the level of financial security positively influences the payment of treatment costs and the maintenance of the patient's health. The income level of the patients included in the study was 16.7±6.2% men, 30.6±7.7% women low, 58.3.0±8.2% men, 69.4±7.7% women medium, 25.0±7.2% men high. There were no women with high income level.

Material security of patients defines their living conditions, which was reflected in the results of the study. Most of the patients included in the study (90.0%) reported that their separate living quarters were a house or a flat. The remaining 10.0% indicated living conditions (dormitory, communal flat or other living space).

On analyzing the marital status according to the questionnaire data, 72.2±7.5% of patients (men) and 69.4±7.7% of patients (women) were married, 27.8±7.5% of patients (men) and 30.6±7.7% of patients were single (women).

The great majority of the referred patients (90.0%) followed a different diet, 8.0% of the examined patients sometimes used especially soft food in their diet, 2.0% - hard food.

Analysis of the results obtained by age groups showed that 30.6±7.7% of male patients and 97.2±2.7% of female patients had no bad habits (smoking, alcohol), while 69.4±7.7% of male patients and 2.8±2.7% of female patients had bad habits.

Regarding the frequency of seeking medical dental care according to age group, 33.3±7.9% of men and 25.0±7.2% of women visited the dentist irregularly (once a year), 41.7±8.2% of men and 33.3±7.9% of women visited the dentist only for acute pain or unbearable conditions, 25.0±7.2% of men and 41.7±8.2% of women visited the dentist regularly, especially for preventive purposes.

In order to assess the quality of professional training of the dentist performing OT SPA and the work they perform we conducted a survey of orthopedic dentists with various scientific and medical degrees. For

this, a questionnaire was designed and administered to 61 dentists working at the AMU Dental Education Clinic. The questionnaire included 46 questions, with multiple-choice answers to each question.

Of the physicians who responded to the questionnaire, 13 were younger than 40 years of age, 21 were 40-49 years of age, 13 were 50-59 years of age, and 14 were older than 60 years of age ($P\chi2=0.130$, PU=0.128).

Of those who answered the 2nd question of the questionnaire, 8 were associate professors, 44 were assistant professors and 9 were lab assistants ($P\chi2=0.155$, PU=0.056). According to the answer to question 3 of the questionnaire, 27 people indicated that they had up to 20 years of work experience, 14 people had 20-29 years of work experience, 14 people had 30-39 years of work experience, and 6 people had more than 40 years of work experience ($P\chi2=0.106$, PU=0.015). According to the answers to question 4 of the questionnaire, 5 people indicated that they have 1-5 years of work experience, 8 people - 5-10 years, 9 people - 10-15 years, 18 people - 15-20 years, 25 people - 20-25 years and 19 people - more than 25 years. Responding to question 5 of the questionnaire, 58 people indicated that they had completed internship and 3 people - residency ($P\chi2=0.739$ PU=0.741). In accordance with the questionnaire, the fact that the basic education of specialists is internship and residency provide a sufficient analytical approach to the problem.

Responding to question 6 of the questionnaire, 56 people noted that they had received more than 570 hours of training in the specialty of orthopedic dentistry. 5 (19.2%) women noted that they had not received training. Based on the answer to question 7 of the questionnaire, 61 people noted that they had taken advanced training courses in the specialty of "orthopedic dentistry" (PU=1,000). According to question 8 of the questionnaire, everyone, including 35 men and 26 women (100%), attended dental exhibitions, conferences, master classes on orthopedic dentistry, the answer is "yes" (PU=1,000). According to question 9 of the questionnaire, 30 people indicated that they had an academic degree, 31 did not ($P\chi2=0.149$, PU=0.152). According to question 10 of the questionnaire, everyone including 35 men, and 26 women (100%) indicated that they have a permanent job. According to

question 11 of the questionnaire, 35 males and 26 females (100%) indicated that no one has an additional job. According to question 12 of the questionnaire, 32 people admitted that they receive less than 3 patients per shift, 24 people receive 3-5 patients and 5 people receive 8-10 patients per shift.

On question 13 regarding how much time you spend on the patient during the consultation, 4 people responded 10 minutes, 10 people responded 15 minutes and 47 people responded 20 minutes ($P\chi2=0.420$, PU=0.222).

To the 14th question on whether you involve other professionals during the consultation, 54 people answered yes and 7 people answered no ($P\chi2=0.332$, PU=0.340). To question 15 regarding whether you would consider the use of additional examination methods, especially radiography, in metal-ceramic prosthetics, 35 men and 26 women (100%) answered "yes". In question 16 of the questionnaire, asked whether you use modern diagnostic methods in your practice, in particular computerized tomography, 52 people answered that they always use them, 8 - only in the presence of serious dental defects, and 1 (2.9%) man - only in diseases of the temporomandibular joint.

On question 17 concerning whether you record the patient's permission or refusal for X-ray examination in the medical record of the questionnaire, 15 people answered "yes" and 46 people answered "no" ($P\chi2=0.170$, PU=0.177). For the 18th question whether you coordinate the treatment plan with the patient in the medical record of the questionnaire, 35 males and 26 females (100%) answered "yes". For the 19th question regarding whether you obtain consent for voluntary information from the patient in the medical record of the questionnaire, 59 men answered "yes", 2 (7.7%) women answered "no". For question 20 about obtaining consent for voluntary information in the medical record of the questionnaire, 13 people answered verbally, 9 people answered in writing, and 39 people answered in writing on the chart ($P\chi2=0.867$, PU=0.717).

To the 21st question regarding how much time you spent with a patient at visit, 4 people answered 20 minutes, 25 people answered 1 hour, and 22 people answered according to our request ($P\chi2=0.627$, PU=0.920). To the 22nd question regarding whether you would be

willing to do documentation on the patient during the visit, 51 people answered yes and 10 people answered no (Pχ2=0.702, PU=0.707).

For question 23 on the survey 56 people answered "yes", I do it myself, and 5 people answered "no", the assistant does it for me (Pχ2=0.528, PU=0.535). For the 24th question of the questionnaire, when you fill in the medical record, 15 people responded immediately after seeing a patient, 40 people responded at the end of the working day, nobody responded at the end of the working week and 6 people responded in their free time (Pχ2=0.143, PU=0.061). For the 25th question of the questionnaire "who familiarized you with the rules of medical documentation" 7 people answered - university teachers, 5 people - my work colleague, 5 people - head of department, 2 (5,7%) men - chief physicians, 42 people answered - I familiarized myself (Pχ2=0,324, PU=0,601). For the 26th question of the questionnaire, according to your opinion, whether the existing medical record of a dental patient needs adjustment, 14 people answered "yes", 47 people answered "no" (Pχ2=0.075, PU=0.079). For the 27th question of the questionnaire, do you use modern prosthodontic and diagnostic methods that are not available in your experience, 28 people answered "yes", 33 people answered "no" (Pχ2=0.283, PU=0.287). For question 28 of the questionnaire, do you use an articulator in the diagnostic phase, 5 people answered no, 44 people answered rarely, and 12 people answered only in case of temporomandibular joint disorders (Pχ2=0.068, PU=0.897).

For question 29 of the questionnaire, do you perform OT with stamped caps, 10 people answered yes, 51 people answered no (Pχ2=0.224, PU=0.228). For question 30 of the questionnaire, whether you send the patient's teeth for depulping in metal-ceramic cap prosthetics, 31 people answered always, 30 people - depending on the clinical situation (Pχ2=0.096, PU=0.099). For question 31 of the questionnaire "do you utilize water cooling when preparing a root tooth for a metal-ceramic cap?" 29 people answered always, 30 people - only in a tooth with preserved pulp, 2 (7.7%) women answered "no".

When asked the 32nd question of the questionnaire "How do you restore a tooth affected by caries on more than 2/3 of its surface?" 2 (7.7%) women answered, "with a filling", 47 - "filling + anchor post"

and 13 - "with a metal post" (Pχ2=0.305, PU=0.549). To the 33rd question of the questionnaire, "Do you use temporary caps and mouthguards during the preparatory phase of prosthodontics?" 24 people responded "Always", 7 people responded "Only in frontal prosthetics" and 30 people responded "Do not use" (Pχ2=0.171, PU=0.306). To the 34th question of the questionnaire "Are you working with metal-free ceramics?" 57 people answered "Yes", 4 (15.4%) women answered "No". For the 35th question of the questionnaire "If the bite position is incorrect, do you use a bite template or do you do orthodontic training" 60 people answered 'Yes', 1 (3.8%) woman answered "No". To the 36th question of the questionnaire, which measuring material do you use for the basic model, 5 people answered alginate, 27 people answered silicone, 29 people answered thermoplastic (Pχ2=0.178, PU=0.136). To question 37 of the questionnaires, do you use a retraction handle when taking the main measurement in metal-ceramic cap prosthetics, 59 people answered that they always use it, 2 people answered that they use it only when prosthetics of the anterior group of teeth. No person answered that they did not use it (Pχ2=0.830, PU=0.832).

To 38 question of the questionnaire, whether you conduct dispensary monitoring of your patients, 48 people responded "yes", 13 people - "no" (Pχ2=0.964, PU=0.965). To the 39th question of the questionnaire, do you analyze the quality of your work, 60 people answered "yes", 1 (3.8%) woman answered "no" (Pχ2=0.332, PU=0.340). To the 40th question of the questionnaire, what is your tactic when a medical error is detected, 3 people answered do not notice, 5 people consulted with colleagues, 18 people referred for consultation in another medical institution, 29 people assisted the patient, 6 people informed the patient. Nobody responded to schedule an additional examination (Pχ2=0.106, PU=0.085).

To the 41 questions in the questionnaire about whether the head of department in your polyclinic often supervises the quality of documentation preparation and doctor's activity, 6 people answered every week, 45 people - once a month, 6 people - once a quarter, 4 people - never. None answered, "every day" (Pχ2=0.806, PU=0.420). To question 42 on the questionnaire about whether the clinical expert

committee meetings are held frequently in the polyclinic 49 people answered once a month, 10 people answered never, 1 (3.8%) woman answered once a week, 1 (3.8%) woman answered once every six months (Pχ2=0.650, PU=0.798). To the 43 question about what administrative measures are taken against you for a medical error, 57 people replied submitted for discussion, 3 (11.5%) women were reprimanded, 1 (2.9%) man was reprimanded.

For question 44 of the questionnaire, who do your patients turn to in case of dissatisfaction, 58 people answered "to me" - to the doctor, 1 (2.9%) male - to the management, 1 (3.8%) female - to the dental association and 1 (2.9%) male - to the Consumer Protection Society. They indicated that they did not go to court (Pχ2=0.437, PU=0.786). To the 45th question of the questionnaire, how your conflict with a patient usually ends, 60 people answered with a repeated appeal, and 1 (2.9%) man - with an investigation by the management. No one answered filing a civil suit (Pχ2=0.586, PU=0.592). To the 46th question of the questionnaire, who can protect you in case of a conflict situation, 57 people answered correctly drawn up medical documentation, 2 people - chief physician, 2 people - current legislation (Pχ2=0,163, PU=0,417).

Hence, from analyzing the responses to the relevant questions of the questionnaire, it became clear that in conducting SPA, TR defect and OT OA, depending on the clinical situation, the specialists who mainly perform this work have a high level of training.

RESULTS

1. 20 (55.6%) male and 19 (52.8%) female patients with Secondary Partial Adentia presented minor occlusal defects and anomalies requiring comprehensive orthopedic treatment [2,3].

2. Retrospective analysis of 182 dental patient cards (Form 043/U) prepared by orthopedic dentists at the AMU Dental Education Clinic in 2015-2018 revealed that the registrar of the dental institution clearly and completely recorded the passport section in all the cards, but none of the cards completed by orthopedic dentists had orthodontic

preparation prior to treatment when planning orthopedic treatment for secondary partial adentia [5,8].

3. In secondary partial adentia, in patients with dental row defects and occlusal anomaly, the distance between the relative resting position and the central occlusion of the jaws is more than 3 mm, and the facial angle is more than 88°, which is an indication for complex orthopedic treatment [6,7].

4. In the course of complex orthopedic treatment of secondary partial adentia, orthodontic preparation was performed to restore the normal physiologic height of teeth, teeth row, and bite. Before orthodontic preparation the distance between relative rest and the position of central occlusion was 4-6 mm (PU=0.539), facial angle - 89-92° (PU=0.501), after orthodontic preparation the distance between relative rest and the position of central occlusion was 2-3 mm (PU=0.571), facial angle - 85-87° (PU=0.537). Observed positive dynamics after orthopedic treatment with the use of fixed bridge orthopedic construction, the treatment algorithm was developed [1,9,10].

5. Orthodontic preparation before orthopedic treatment of patients with defects of dental rows and occlusal anomalies in secondary partial adentia depends on the medical culture and socio-demographic characteristics of patients, material and technical equipment of a medical institution providing dental medical services, the level of training of doctors working in it and the ability to teach the patient [4].

PRACTICAL RECOMMENDATIONS

1. In secondary partial adentia, normal physiologic relationships of the teeth row are disturbed, additional pathologic load on the teeth occurs, TR and OA, and deformities appear over time. Comprehensive OT is required to solve the problem.

2. When performing OT with FBPD of secondary partial adentia, it is important to use additional methods of examination at the stages of basic examination, diagnosis, planning and treatment, as well as to correctly record Form 043/U in the patient's medical record.

3. In performing OT with FBPD of secondary partial adentia (Kennedy type III, small and medium defects), relative rest and CO status should be defined. Note that relative resting and CO status are directly proportional to facial angle.

4. In planning OT with FBPD for dental anomalies and deformities and TR depending on the duration of the secondary partial adentia defect, consideration should be given to the long-term effective use of the construct, the absence of defects and complications after treatment, the tolerance for clinician error, and the prognosis of treatment outcomes.

5. In patients with TR and OA defects in secondary partial adentia, it is important to teach the patient to perform OP before OT, regardless of the medical culture and socio-demographic characteristics of patients, in accordance with the material and technical equipment of the medical professional

LIST OF PUBLISHED WORKS ON THE SUBJECT OF THE DISSERTATION:

1. Cəlilova Q.İ. Hissəvi adentiya zamanı xəstələrə göstərilən ortopedik stomatoloji yardımın keyfiyyəti / Ə.T. Ağayevin 75 illiyinə həsr edilmiş elmi konfransın materiallar toplusu. Bakı, 2019, s. 50-55.

2. Pənahov N.A., Cəlilova Q.İ., Bayramov. Y.İ. Okklüziya anomaliyası və diş sırası qüsurlarının qarşılıqlı əlaqəsi // Sağlamlıq, Bakı, 2019, №2, s. 169-170.

3. Panahov N.A., Jalilova Q.İ., Bayramov Y.İ. Etiopathogenesis of occlusion and dental anomalies / 1 st International scientific congress. Baku, 2019, p. 151-152.

4. Джалилова Г.И. Социально демографический статус пациента при вторичной частичной адентии // Вестник современной клинической медицины, Казань, 2020, т.13, №1, с. 22-26.

5. Cəlilova Q.İ. İkincili hissəvi adentiya zamanı diş-çənə sistemi anomaliya və deformasiyasının kliniki xarakteristikası // Azərbaycan Təbabətinin Müasir Nailiyyətləri, Bakı, 2020, №3, s. 79-86.

6. Джалилова Г.И., Панахов Н.А. Патологические изменения в полости рта в резултате вторичной адентии // Медицинские новости, Минск, 2020, №5, с. 72-74.

7. Cəlilova Q.İ. İkincili hissəvi adentiyanın ortopedik müalicəsinin paradont xəstəliklərinin müalicə və profilaktikasından asılılığı // Azərbaycan Təbabətinin Müasir Nailiyyətləri, Bakı, 2023, №2, s. 10-13.

8. Bayramova G.I. Characteristics of anomalies and deformations during partial adentia / XII international scientific conference. Dortmund. Germany, 2024, p. 38-39.

9. Bayramova Q.İ. Hissəvi adentiyanın çıxmayan ortopedik konstruksiya ilə müalicəsindən sonra rast gəlinən ağırlaşmalar //Sağlamlıq, Bakı, 2024, №1, s. 75-79.

10. Байрамова Г.И., Расулова М.А. Изменение лицевого угла при комплексном ортодонтического-ортопедическом лечении / Əziz Əliyevin 128 illiyinə həsr olunmuş elmi praktik konfransın məcmuəsi. Bakı, 2025, s. 229-231.

LIST OF ABBREVIATIONS

CO – central occlusion
FBPD – fixed bridge prosthetic design
FPD – fixed prosthetic design
Go – Gonion
OA – occlusal anomaly
OP – orthodontic preparation
OT – orthopedic treatment
SPA – secondary partial adentia
TMJ – temporomandibular joint
TR – teeth row

The dissertation defense will be held on "30" May 2025, at 14⁰⁰ at the meeting of the Dissertation Council ED 2.50, operating the Azerbaijan Medical University.

Address: AZ1122, Baku, A. Gasimzade street 24, (conference hall).

The dissertation can be accessed at the library of the Azerbaijan Medical University.

The electronic versions of the dissertation and the abstract have been posted on the official website of the Azerbaijan Medical University www.amu.edu.az.

The abstract was sent to the required addresses on
"24" April 2025.

Signed for print: 14.04.2025
Paper format: 60x84 1/16
Volume: 37900 characters
Order: 230
Number of hard copies: 20
"Tabib" publishing house