



**METHODS OF CLINICAL AND DENTAL EXAMINATION  
WHEN USING MODERN DENTURES WITH COMPLETE  
EDENTIA**

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**ABSTRACT**

*The results of a study of the standard of living using the adapted OHIP-14 questionnaire in connection with the efficiency and quality of manufacturing of removable dentures among 120 patients with complete absence of teeth are presented. It has been established that the inability to use prostheses affects the quality of life, significantly worsening all its aspects. Patients who are satisfied with the results of prosthetics have a significantly higher level of quality of life.*

Despite the rapid development of dental implantology, “classical” complete removable prosthetics occupies a leading place in the structure of dental orthopedic care. However, today the effectiveness of this method of orthopedic treatment is insufficient [2,13].

Thus, according to the World Health Organization, 20–26% of patients with complete absence of teeth do not use manufactured dentures for various reasons, most of which are determined by anatomical-physiological, clinical-technological, psychological, toxic-allergic and combined factors [2,3]. Moreover, most often patients refuse to wear dentures due to unsatisfactory fixation and stabilization of the

structures (42.7%), as well as pain due to injury to the mucous membrane during chewing (35.6%) [4,5].

In addition to the objective reasons for the impossibility of using complete removable dentures, there is also a subjective factor, the so-called “non-acceptance” of manufactured structures, despite their full compliance with the requirements. Moreover, a number of researchers indicate that the quality of their manufacture is insignificant in the success of complete removable prosthetics. The use of a face bow, a complex technique for setting teeth, and the use of modern materials cannot significantly affect the results of treatment. Whereas the clinical outcome of prosthetics is largely determined by



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the patient's positive perception of the doctor and his treatment methods [6]. To assess the subjective component in complete removable prosthetics, it is promising to use questionnaires based on determining the level of quality of life [7].

Subsequently, for ease of use, it was shortened to short versions, one of which is OHIP-14 [9]. The purpose of the study is to compare the subjective results of complete removable prosthetics, determined by indicators of quality of life, and data from an objective assessment of the quality of manufactured structures.

The study included the results of observations of 120 patients with complete absence of teeth aged from 63 to 82 years, equally divided between men and women, who received removable dentures for the first time. At the same time, 60 patients were satisfied with the results of prosthetics (control group), while 60 complained of the inability to use prostheses within 2 to 6 months after delivery and applied for re-treatment [3].

To objectify patients' perception of the results of orthopedic treatment, a survey was conducted using the OHIP-14 questionnaire for patients with complete edentia (table). Evaluation criteria for each question: 1.0 points - never; 2.0 points - almost never; 3.0 points - sometimes; 4.0 points - as a rule; 5.0 points - very often. Evaluation criteria for the entire questionnaire: from 14 to 28 points - a good level of quality of life; from 28 to 56 points - satisfactory; from 56 to 70 points - unsatisfactory. As part of the work, 240 complete removable dentures with plate bases (120 each for the upper and lower jaws), manufactured

using traditional technology with obtaining a functional impression with a rigid tray, were examined.

The analysis of the quality of the manufactured prostheses was carried out based on the results of an objective study, which included a functional assessment of the prostheses according to such characteristics as the tightness of the bases, occlusion, retention, stabilization and balance. The correspondence of the bases of complete removable dentures to the tissues of the prosthetic bed (tightness of fit) was determined using the "silicone test". To do this, the internal surfaces of the bases were smeared with petroleum jelly and impressions were taken with silicone impression mass from both jaws under chewing pressure [3,4].

After removing the dentures from the oral cavity, the mass was separated and the thickness of its layer was measured with a micrometer [10]. Subsequently, primary statistical indicators were determined, differences between indicators in groups according to statistical criteria were identified, relationships between variables were established through parametric correlation analysis, types of dependencies and their calculation was carried out using regression analysis.

According to the survey data among the examined patients with complete absence of teeth, the level of quality of life was determined as good only in 35.0±4.4% of cases, satisfactory - in 25.0±4.0%, unsatisfactory - in 40.0±4.5%. At the same time, the average level of quality of life was 43.0±1.6 points. Differentiation of patients depending on the success of the



prosthetics made it possible to establish significant differences between the indicators in the groups [5].

Thus, not a single patient from those who could not use manufactured prostheses had a level of quality of life that was rated as good. A satisfactory level was registered in  $23.3 \pm 5.5\%$  of cases, an unsatisfactory level – in  $76.7 \pm 5.5\%$ . The average level of quality of life obtained for this group of patients was  $60.2 \pm 1.8$  points.

At the same time, the lowest scores were given to questions related to the functional consequences of unsuccessful prosthetics (difficulty in chewing, diction, pain during eating). Also, based on the results of the survey, it was established that patients experienced difficulties with social adaptation and their own comfortable state of health. In 60 patients who were satisfied with the results of prosthetics, a significantly higher level of quality of life was recorded [6,7].

According to our observations,  $13.3 \pm 4.4\%$  of patients in the control group used unsuccessfully manufactured dentures, thus improving social adaptation due to the aesthetic effect of restoring the dentition. At the same time, such prosthetics are not able to satisfy functional needs, in particular, ensure full chewing. According to the results of the “silicone test” among people using prostheses, there was a predominant correspondence of the bases to the prosthetic bed, as evidenced by numerous thinning and perforations of the impressions. However, for  $30.0 \pm 5.9\%$  of dentures for the lower jaw and  $13.3 \pm 4.4\%$  for the upper jaw, a layer of silicone mass was preserved in the

area of the tips of the alveolar ridges with an average thickness of  $0.15 \pm 0.05$  mm, on the vestibular slopes of the alveolar processes and tori -  $0.10 \pm 0.02$  mm. The discrepancy between the base and the prosthetic bed was less pronounced for the oral slopes of the alveolar processes and in the buffer zones on both jaws ( $0.05 \pm 0.01$  mm).

The insufficiently tight fit of the bases to the tissues of the prosthetic bed in the immediate future after the delivery of the dentures is, of course, associated with a violation of the methodology for obtaining functional impressions from edentulous jaws. Analysis of the results of an objective assessment of the quality of manufacturing of complete removable dentures made it possible to establish that in  $31.7 \pm 6.0\%$  of patients who could not use them, the manufactured structures met the requirements. In our opinion, in these cases we can assume a psychological rejection of this type of prosthetics. While the remaining  $68.3 \pm 6.0\%$  had pronounced violations of the technology for manufacturing complete removable dentures, leading to a decrease in their functional characteristics [2,8].

The most common errors ( $70.0 \pm 4.2\%$ ) were associated with insufficient use of the prosthetic field area due to unreasonable reduction of the boundaries of the prosthetic bases, as well as their loose fit to the tissues of the prosthetic bed, identified using the “silicone test”. Thus, the preservation of a layer of silicone mass in the area of the apexes and on the vestibular slopes of the alveolar processes, on the tori, as well as on the oral slopes of the alveolar processes and in the buffer zones was



observed in  $43.3 \pm 6.4\%$  of dentures for the lower jaw and  $20.8 \pm 5.2\%$  for the upper jaw.

In  $20.0 \pm 5.2\%$  of patients, unclear reproduction of the valve zone was established, which led, on the one hand, to disruption of the closing valve at rest, and on the other hand, to the shedding of the dentures during non-chewing movements. In  $30.0 \pm 5.9\%$  of patients, injury to the mucous membrane of the prosthetic bed, including transitional folds, was observed, which made it impossible to use prostheses. At the same time, in  $40.0 \pm 6.3\%$  of patients, it can be assumed that it is impossible to adapt to the manufactured structures, which is associated with incorrect formation of the dentition and, as a consequence, impaired stabilization of the dentures during chewing[5].

A combination of several factors determining unsatisfactory results of prosthetics was established in  $40.0 \pm 6.3\%$  of cases. The conducted correlation and regression analysis made it possible to determine a direct, average in strength, relationship between the objective unified results of assessing the quality of complete removable dentures and patients' subjective perception of the results of prosthetics using the OHIP-14 questionnaire[7,9].

Conclusion. 1. The criteria for the success of orthopedic treatment of complete edentia should be considered not only the compliance of the prostheses

with the requirements, but also the patient's satisfaction with the obtained functional and aesthetic results. In this regard, to evaluate the results of complete removable prosthetics, it is indicative to study the level of quality of life.

2. The inability to use complete removable dentures affects the level of quality of life, significantly worsening all its aspects. According to the results of the survey, a significantly higher level of quality of life was registered among patients satisfied with the results of prosthetics.

3. Based on the results of correlation-regression analysis, a direct, average in strength, connection was established between the quality of manufacturing of complete removable dentures and the level of quality of life of patients with complete absence of teeth.

4. Objective prerequisites for the impossibility of using complete removable dentures associated with violations of manufacturing technology should be discussed in  $68.3 \pm 6.0\%$  of cases. In this case, the most often negative outcome of orthopedic treatment is due to the receipt of a poor-quality impression of the tissues of the prosthetic bed, which leads to a lack of a tight fit and non-compliance with the optimal boundaries of the bases, as well as the formation of artificial dentition that is irrational from the standpoint of the laws of articulation and occlusion.

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