

OPTIMIZATION OF PHONETIC ADAPTATION AFTER PROSTHETICS WITH COMPLETE REMOVABLE DENTURES IN ELDERLY PATIENTS

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Introduction. Removable dentures are perceived as irritants that cause a compensatory-adaptive response. This review attempts to generalize and systematize possible factors that contribute to the adaptation of patients' phonetics to removable dentures.

Phonetic adaptation to removable dentures is a complex process that depends on various factors, the most significant of which are the functional quality of the denture and the patient's motivation to use the denture.

Relevance. Speech is a unique phenomenon that only humans have. It is an important form of communication in society, which directly or indirectly affects the quality of life of patients (Scott, 2001; Jindra, 2002; Ozbek, 2003; Papadaki, 2012). After tooth loss, patients experience chronic limitations in performing common functions, especially chewing, speech functions and aesthetics. This can cause psychological and social problems (Fiske, 1998; Scott, 2001; Jindra, 2002; Papadaki, 2012). The goal of orthopedic rehabilitation is to replace missing teeth, improve aesthetics and restore impaired functions. In case of extensive or complete tooth loss, conventional removable dentures with soft tissue support can be made (Bilhan, 2013). For a long time, traditional removable dentures were the only means of compensating for tooth loss and restoring their function in patients with partial or complete edentia. Müller studied various aspects of the physiological aging process of patients and their relationship with the success of prosthetic rehabilitation. According to forecasts, in the coming decades about half of patients with complete absence of teeth will be people aged 30-50 years (Kurbanov O.R., 2002; Spirina V.Yu. and Sadykov M.I., 2003; Douglass C, Furino A., 1990). The significance of these aspects may vary depending on the patient's age category, professional status and phenotypic changes. Complete edentia is most often diagnosed in people over 60 years old, despite the revealed prevalence, when 15% of people aged 40 also need complete removable dentures (see Vares E.Ya., 1993). Forecasts indicate that in the coming decades, about half of patients with complete edentia will be people aged 30 to 50 years (Kurbanov O.R., 2002; Spirina V.Yu. and Sadykov M.I., 2003; Douglass C, Furino A., 1990).

With increasing life expectancy, the demand for prosthetic rehabilitation for the aging population is growing. Speech is a unique phenomenon that only humans have. It is an important form of communication in society, which directly or indirectly affects the quality of life of patients (Scott, 2001; Jindra, 2002; Ozbek, 2003; Papadaki, 2012). After tooth loss, patients experience chronic limitations in performing general functions, especially chewing, speech functions and aesthetics. This can cause psychological and social problems (Fiske, 1998; Scott, 2001; Jindra, 2002; Papadaki, 2012). The goal of orthopedic rehabilitation is to replace missing teeth, improve aesthetics and restore impaired functions. In case of extensive or complete tooth loss, conventional removable dentures with soft tissue support can be made (Bilhan, 2013). Vidzis, 2012).

As part of a pronounced demographic shift, marked by an increase in the number of elderly people, an additional increase in morbidity is observed (see Luts kaya I.K., 1995; Yushmanova T.N., 1999; Borisova E.N., 2000; Belokrinitsky D.V., 2003; Gorshunova N.K. et al., 2003). Age factors significantly affect the nature and complexity of orthopedic treatment, taking into account the limited adaptive capabilities of the body. The study by I.Yu. Lebedenko (2004) is devoted to aspects of orthopedic treatment of edentulous elderly patients (>75 years), revealing that 51.7% of them systematically use dentures, 26.2% - only during meals, 17.1% - do not resort to using dentures at all, and 2.7% - use them only during communication. It is noted that almost half (41.6%) of this age group of patients do not maintain hygienic procedures for caring for dentures and the oral cavity.

It is emphasized that elderly patients are a heterogeneous group, where each person requires an individual approach, and dentists should be well aware of the gerontological features of dental treatment (Muller, 1993; Muller, 1995a; Muller, 1995b). Fiske and his colleagues studied the emotional aspect of tooth loss and its impact on the process of patient adaptation to dentures (Fiske, 1998; Scott, 2001). It was found that the installation of removable dentures significantly changes the volume of the oral cavity, disrupting the flow of exhaled air, as well as articulatory contacts of the tongue and teeth, hard palate and alveolar mucosa when pronouncing speech sounds. It is known that at the initial stage of patient adaptation to removable dentures, speech distortions are often observed, which decrease over time; however, in some cases they can become permanent (Dragobetsky, 1992; Ozbek, 2003; Rogrigues, 2010; Van Lierde, 2012; Knipfer 2012).

It has been established that the installation of removable dentures significantly changes the volume of the oral cavity, disrupting the flow of exhaled air, as well as articulatory contacts of the tongue and teeth, hard palate and mucous membrane of the alveolar process when pronouncing speech sounds. It is known that at the initial stage of patient adaptation to removable dentures, speech distortions are often observed, which decrease over time; however, in some cases they can become permanent (Dragobetsky, 1992; Ozbek, 2003; Rogrigues, 2010; Van Lierde, 2012; Knipfer 2012).

Considering that elderly patients have a reduced ability to adapt. Taking into account the number of lost teeth and the financial capabilities of each patient, 25% of patients are provided with traditional partial dentures on an acrylic base (Soboleva, 2006; This can be explained by age-related changes in both the nervous system and muscle coordination, as well as other aging processes (Muller, 1995a; Helgeson, 2002; Critchlow, 2010; Mysore, 2012). With an increase in life expectancy, the demand for prosthetic rehabilitation for the aging population is growing. Müller studied various aspects of the physiological aging process of patients and their relationship with the success of prosthetic rehabilitation. It is emphasized that elderly patients are a heterogeneous group, where each person requires an individual approach, and dentists should be well aware of the gerontological features of dental treatment (Muller, 1993; Muller, 1995a; Muller, 1995b). Fiske and colleagues studied the emotional aspect of tooth loss and its impact on the process of patient adaptation to dentures (Fiske, 1998; Scott, 2001)

It should be noted that the factors influencing the phonetic adaptation of patients are not fully reflected in the literature, so practical recommendations for improving the results of prosthetic rehabilitation have not yet been developed. However, there are many patients whose circumstances (medical, psychological or financial) force them to adhere to traditional methods of prosthetics (Critchlow, 2009; Carlsson, 2010).

It should be taken into account that elderly patients have a reduced ability to adapt. According to the World Health Organization (WHO, 1999), 20-26% of patients who have undergone complete denture therapy do not use them for various reasons, mainly due to unsatisfactory fixation, especially on the lower jaw (Tanrykuliev P.T., 1988; Kopeikin V.N. et al., 1995). According to the studies of B.P. Markov (1966, 2001) and Costa E. et al. (1973), 55% of patients aged 60 and older require repeated dentures. The significance of this need may vary depending on age, associated facial changes and professional activity. Complete secondary adentia is most often diagnosed in people aged 60 and older, but even at 40 years old 15% of patients experience the need for complete dentures (E.Ya. Vares, 1999, 2002). According to scientists' forecasts, the next 20-30 years may bring changes in statistics increasing to 50%, especially among patients in the age group from 30 to 50 years (Ch.A. Babush, 2004; A.A. Kulakov, 2006; S.N. Churygin, 2008).

The purpose of the study is to analyze the literature on phonetic adaptation in patients with removable dentures, to identify factors that contribute to the degree of speech adaptation. Taking into account the number of lost teeth and the financial capabilities of each patient, 25% of patients are provided with traditional partial dentures on an acrylic base (Soboleva, 2006; This can be explained by age-related changes in both the nervous system and muscle coordination, as well as other aging processes (Muller, 1995a; Helgeson, 2002; Critchlow, 2010; Mysore, 2012).

Objective. The purpose of the study is to analyze the literature on phonetic adaptation in wearers of removable dentures in order to identify factors influencing the degree of speech adaptation.

Research results. To date, there is no universal method for assessing the quality of speech after prosthetics. In some studies, the analysis of patients' speech was carried out using acoustic-phonetic methods (Runte, 2001; Runte, 2002; Jindra, 2002; Stojcevic, 2004; Zaki Mahross, 2015) (evaluated spectrograms, spectral analysis).

In other studies, experienced speech therapists were invited to collaborate (Ozbek, 2003; Rodrigues, 2010), while other authors recommend using palatograms to evaluate the speech process and further personalization of removable dentures, which leads to improved phonetic adaptation (Farley, 1998; Kong, 2008).

Phonetic aspects of prosthetics in the complete absence of teeth were studied by K.V. Rutkovsky (1970), E.I. Gavrilov (1973, 1979), Z.V. Ludilina (1973, 1975), N. Popov and G. Georgiev (1980), R. Devin (1960), H. Schutz (1969), I.G. _ Agnello, L. Wictorin (1972) Correct design of the denture base is one of the main problems of the phonetic aspect of orthopedic treatment of patients with complete absence of teeth. The act of speech is very complex and correct word formation in pronunciation depends not only on how the artificial teeth are placed, but also on the shape of the vestibular and lingual surface of the denture base, the interalveolar height, the level of the occlusal surface of the teeth and other factors.

Among the many research methods used to study speech - sound, graphic, spectrographic and others, palatography is recognized as the most acceptable in modern dentistry.

Palatography is a recording of imprints of contacts of the tongue and palate when pronouncing a sound. An objective method for the formation and correction of speech articulations Z.F. Vasilevskaya (1971) considers the comparison of palatograms of speech formation on wax bases or dentures. Palatography data can be used for phonetic correction of dentures - when articulating consonant sounds. Poor modeling of the palatal surface of the base, incorrectly modeled shape of

the artificial dental arch, thickenings on the palatal side in the cervical part of the base reduce the volume of space called the resonator, which affects the clarity of pronunciation of the anterior occlusive sounds "t", "d", "n". To clarify the zones of speech formation of the boundaries of the denture bases, K.V. Rutkovsky (1970), N.V. Kalinina and V.A. Zagorsky (1990) suggest phonemes, especially "S" and "3". Such phonemes as "sh" and "zh" are pronounced with a lisp if the denture base is sharply thickened in the anterior section.

Each of these methods has its own drawback, so other objective and sufficiently independent methods of speech assessment are needed. Recently, several scientific papers have appeared in which the quality of patients' speech was analyzed using autonomous computer speech recognition systems (Inukai, 2006; Ando, 2006; Stelzle, 2010; Wada, 2011; Knipfer, 2012; Wada, 2014). These methods turned out to be objective and fairly easy to implement. However, due to technical limitations, this type of analysis is available only for some languages, namely German (Stelzle, 2010; Knipfer, 2012) and Japanese (Ando, 2006; Inukai, 2006; Wada, 2011; Wada, 2014).

Conclusion. Phonetic adaptation to removable dentures is a complex process that depends on various factors, the most significant of which are the functional quality of the denture and the patient's motivation to use the denture.

When studying the literature on this topic, differences in the methods for assessing the quality of speech after dental treatment were revealed. To date, there is no universal method for this assessment. Scientific studies do not contain systematized data on the time of speech adaptation to dentures and on the factors influencing this process. In the future, the use of computer technology will play an important role in the manufacture of dentures, especially for patients for whom speech is important in their professional activities. Modern technical means allow more accurate control over the restoration of speech during orthopedic treatment, so it is advisable to carry out scientifically based methods for assessing phonetic adaptation to dentures using new technologies. Thus, the development of a comprehensive method for assessing the quality of prosthetics based on the speech production factor is one of the objectives of our study.

The results of this study can be implemented in clinical practice, providing doctors and dental technicians with modern methods for producing prostheses that satisfy patients in functional, aesthetic and psychological terms.

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