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Universidad del Zulia
Facultad Experimental de Ciencias
Departamento de Ciencias Humanas
Maracaibo - Venezuela

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A new modification of the dental prosthesis in the postoperative restoration of chewing function

Andrey Sevbitov[1,*]
[1]I.M. Sechenov First Moscow State Medical University (Sechenov University)
avsevbitov@mail.ru

Nikolay Mitin[2]
[2]Ryazan State Medical University named after academician I.P. Pavlov
cariesmedia197@yandex.ru

Maria Kuznetsova[3]
[3]I.M. Sechenov First Moscow State Medical University (Sechenov University)
nimitin@yandex.ru

Aleksey Dorofeev[4]
[4]I.M. Sechenov First Moscow State Medical University (Sechenov University)
mary-smith@yandex.ru

Kirill Ershov[5]
[5]I.M. Sechenov First Moscow State Medical University (Sechenov University)
cariesmedia197@gmail.com

Abstract

The purpose of this study is clinical testing of the effectiveness of the influence of the treatment methods on the masticatory function of dental patients. As a result, by the 30th day of postoperative aftertreatment, the level of function of mastication in the main group significantly and authentically ($p \leq 0,05$) exceeded a similar indicator in the control group. In conclusion, use or modification of tooth and dentoalveolar prostheses with punctual retentions on a basic basis in combination with the use of Visposil phytoointment leads to faster and high-quality optimization of chewing function during postoperative aftertreatment at stomatologic patients.

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Keywords: Chewing efficiency, Dental prosthesis, Recovery.

Una nueva modificación de la prótesis dental en la restauración postoperatoria de la función masticatoria

Resumen

El propósito de este estudio es la prueba clínica de la efectividad de la influencia de los métodos de tratamiento en la función masticatoria de los pacientes dentales. Como resultado, a los 30 días del postratamiento postoperatorio, el nivel de función de la masticación en el grupo principal de manera significativa y auténtica ($p \leq 0,05$) superó un indicador similar en el grupo de control. En conclusión, el uso o la modificación de prótesis dentales y dentoalveolares con retenciones puntuales sobre una base básica en combinación con el uso de la fitoointización de Visposil conduce a una optimización más rápida y de alta calidad de la función de masticación durante el postratamiento postoperatorio en pacientes estomatológicos.

Palabras clave: Eficiencia de la visión, Prótesis dental, Recuperación.

1. INTRODUCTION

Currently in Russia, as well as around the world, is observed a significant increase in the frequency of diseases, injuries and wounds of the jaws leading to the emergence of maxillofacial defects and defects of dentition. At the same time, irrespective of ways in the proportion of the enlarged number of surgical interventions, postoperative restoration and optimization of function of a mastication is the priority purpose of surgical treatment and an orthopedic grant

that causes broad use of removable tooth and dentoalveolar prostheses (ERSHOV, SEVBITOV, DOROFEEV, PUSTOKHINA, 2018).

Lack of teeth affects the well-being of patients and their satisfaction from life. The complete absence of teeth, as well as the use of poor-quality dentures often cause problems with chewing and swallowing, a decrease in chewing ability, affecting the nature of nutrition: patients begin to eat softer processed food. This type of diet can affect the overall condition by increasing triglyceride levels and increasing the risk of cardiovascular disease (AHMAD & AHMAD; 2018).

Rehabilitation of patients with a lack of teeth remains an urgent problem of modern dentistry. Tooth loss is quite common and is related to socioeconomic status. Treatment of defects in the dentition and complete absence of teeth can be carried out using various methods of treatment, such as, for example, orthopedic structures based on dental implants (KUZNETSOVA, NEVDAKH, PLATONOVA, SEVBITOV & DOROFEEV, 2018). However, removable dentures are still widely used: partial and full dentures are used by more than half of elderly patients in developed countries.

Adaptation of patients to removable dentures is a complex and long process, which can be influenced by various factors. Successful rehabilitation of patients with removable dentures depends on the achievement of aesthetic requirements, phonetic ability, and, above all,

the correct use of the prosthesis during chewing. Recently, the most important indicators of the effectiveness of dental treatment were qualitative and quantitative criteria of quality of life, based on the subjective assessment of the patient's health and the results of treatment.

For the purpose of decrease of a mechanical boring and acceleration of adhesion of a postoperative wound in an odontology administration of medicines from a contact surface of a prosthesis in this connection, there is a problem of conservation of sufficient therapeutic concentration of medicine during intervals between meals lasting not less than 5 hours is widespread. The experiments found that the artificial retention of point forms, initially applied to smooth the denture base, can significantly slow down the absorption of the ointment and gel-like drugs, which leads to maintaining their effective concentration within the specified time limits. It is also shown the positive impact of using a modified denture with point recenzije in combination with ointment "Visposil" on the rate of healing of surgical wounds (KOROTKIKH, SEVBITOV, ADMAKIN, MISHIN, MITIN, PONOMAREV, 2015).

Due to stated, the special relevance is acquired by a question of the extent of influence of this modification of a prosthesis in combination with the drug "Visposil" on rate and degree restoration of the functions of mastication lost or weakened as a result of the previous stomatologic operations.

2. THEORETIC FOUNDATION

The WHO gives the following definition:

> Rehabilitation is a set of activities designed to provide persons with disabilities as a result of diseases, injuries and birth defects adaptation to new conditions of life in the society in which they live. Three types of rehabilitation (medical, labor, social), in fact, correspond to three classes of consequences of diseases: 1) medical and biological, consisting in deviations from the normal morphological and functional status; 2) reduction of working capacity and / or performance of the patient; 3) social maladjustment, that is, violation of ties with the family and society (PAKDEL & TALEBBEYDOKHTI, 2018).

In surgical dentistry, the most relevant areas of rehabilitation associated with the most common pathological conditions of the dental system observed in the population of different regions of the globe - partial or complete loss of teeth KALIVRADZHIYAN, GOLUBEV, RYZHOVA, KAVERINA (2001) and maxillofacial defects. In recent decades, in the Russian Federation, there has been a significant increase in the number of dental patients who are shown multiple simultaneous removals of teeth. Usually, this is caused by periodontitis, periodontal disease, injuries of the maxillofacial region, complicated by caries, and also idiopathic disease (SEVBITOV, BORISOV, DAVIDYANTS, TIMOSHIN, ERSHOV, ENINA, PUSTOKHINA, 2018).

In 70% of the population of Russia aged 20-50 years, the integrity of the dentition is violated. Many etiological factors such as

heredity, type of occlusion, the status of hard tissue and periodontium of the remaining teeth, age, comorbidities, and prescription loss of teeth, determine the great diversity of clinical manifestations of this condition. However, in Russia, as in the world, there is a significant increase in the frequency of cancer, injuries, and injuries of the jaws, leading to the emergence of CHLD, which is associated with environmental degradation, man-made and natural disasters, increased social tension, local wars, increased injuries, etc. (LESNYKH, 2003).

As the defects of the dentition, and especially maxillofacial defects, most often resulting from odontogenic inflammatory diseases, traumatic injuries of the jaws and cancer, generate a number of pronounced functional, aesthetic and psychological problems associated with certain limitations of life and social adaptation, which requires not only high-quality dentofacial and maxillofacial prosthetics but also no less quality comprehensive rehabilitation. The stage of medical rehabilitation in surgical dentistry, carried out after the provision of the necessary surgical aid, can be divided into 2 main phases: the provision of orthopedic care and post - orthopedic rehabilitation (LOKTIONOVA, ZHAKHBAROV, YUMASHEV, UTYUZH, NEFEDOVA, 2016).

3. METHODOLOGY

This work was done at Sechenov University with supported by the "Russian Academic Excellence Project 5-100". Evaluation of the efficiency of masticatory function by the method of V. N. Trezubov

and coauthors (Trezubov V.N. et al.,2003; Trezubov V.N. et al., 2010) in parallel with the computer assessment of the degree of occlusion KOROTKIKH, SEVBITOV, ADMAKIN, MISHIN, MITIN & PONOMAREV (2015) was carried out at 180 patients of a stomatologic profile aged from 21 up to 80 years needing postoperative aftertreatment with their separation into two groups: control (I) 60 patients who in the postoperative period were traditional complex rehabilitation benefits and the main (II) 120 patients subjected to dental prosthesis with a point recenzije in combination with ointment Visposil (RACZINSKI & OBERMAN, 1996).

As basic data for functioning of an algorithm of assessment of chewing efficiency on the basis of the definition of degree of an occlusion in the computer program developed by us the scan of a plate of basic wax from the okklyuziogrammy patient in the central occlusion was used. Occluzionna was obtained by the method of (POTAPOV, 2009; AHMAD & AHMAD, 2019). The wax plate was scanned on a lumen therefore on the scanned image occlusal contacts differed on brightness which depended on the density of a smykaniye of teeth antagonists. The final definition of the degree of occlusion was made by the automated comparison with reference scans. Determination of efficiency of chewing function and degree of occlusion was carried out just before surgical intervention, and further – 10, 20 and 30 days later.

4. RESULTS

The received results are presented in Table 2 and reflected in Figure 1.

Table 1: Comparative dynamics of indicators of efficiency of chewing function and degree of occlusion at stomatologic patients in the postoperative period of after treatment (% M±m)

	The effectiveness of chewing efficiency		Degree of occlusion	
	I group,%	II group,%	I group,%	II group,%
Source	51,3±6,5	52,1±4,6	45,1±6,4	46,2±4,6
10 days	55,7±6,4	56,9±4,5	50,2±6,5	53,4±4,6
20days	58,2±6,4	66,8±4,3 *	57,8±6,4	66,1±4,3 ***
30 days	60,1±6,3 +	74,9±4,1 **** +	63,9±6,2 *	75,2±3,9 ****
Patients	60	120	60	120

Icons * (compared to the initial value) and + (in comparison with the same value in the other group) are marked, respectively, significantly different parameters: 1 – $p \leq 0.05$ – $p \leq 0.001$.

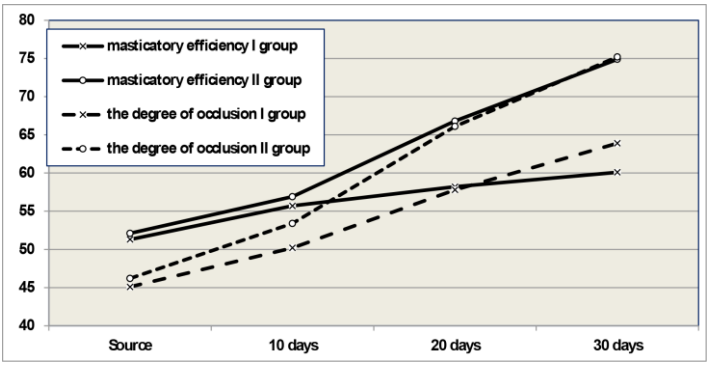

Fig.1. Comparative dynamics of chewing efficiency and degree of occlusion (% to the norm) in the postoperative period after treatment.

Initial, average presurgical values of masticatory efficiency in control and main groups had the lowered and close values (51,3±6,5 and 52,1±4,6%, respectively). Average values of chewing efficiency in the main group showed noticeable and reliable rising of level for the 20th day of the postoperative period with achievement of a maximum (74,9% of norm) – for the 30th day while in control group the similar tendency had significantly smaller expression, and statistical criteria of reliability of difference from an initial indicator were answered by only the maximum level of chewing efficiency (60,1%) reached by 30th day. As a result, by the 30th day of postoperative aftertreatment, the level of function of mastication in the main group significantly and authentically ($p \leq 0,05$) exceeded a similar indicator in the control group.

5. DISCUSSION

On this background occlusion exponent showed smaller values at the first two definitions, in both groups, being authentically compared to the level of function of mastication by 20th day and exceeding them to the 30th.

Degree of an occlusion reflecting the degree of congruence of chewing surfaces of a prosthesis and the remained dentition elements, characterizes, in fact, the possible potential of its functional use in which concrete limits are defined by specific features of functioning of

the muscular device of mastication. This situation is confirmed by the practical coincidence of average values of degree of occlusion and chewing efficiency, since 20 in the afternoon observation in the main and control groups. It is obvious that the values of degree of an occlusion defined at a static load are enlarged generally according to extent of stopping of inflammation and pain in the field of a prosthetic bed while the improvement of indicators of ZhE depends as well on the gradual adaptation of the chewing device to a prosthesis.

The received results allow stating high efficiency of use of the offered modification of tooth and dentoalveolar prostheses in combination with the use of Visposil phytoointment for the purpose of faster and high-quality optimization of chewing function during postoperative aftertreatment at stomatologic patients.

6. CONCLUSION

The use of a modification of tooth and dentoalveolar prostheses with punctual retentions on a basic basis in combination with the use of Visposil phytoointment leads to faster and high-quality optimization of chewing function during postoperative aftertreatment at stomatologic patients. The practical coincidence of indicators of chewing efficiency and degree of occlusion by 20th and 30th days of definition, in case of use of the modified dentoalveolar prostheses in combination with Visposil phytoointment, demonstrate

interchangeability of these methods in clinical practice in the specified definition terms.

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