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CHANGES IN THE BIOELECTRIC ACTIVITY OF MUSCULUS MASSETER IN CASE OF MANDIBLE EDENTULOUSNESS TREATMENT

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Abstract. The objective of the research: to define the dynamics of changes in bioelectric activity of mm. masseter dexter et sinister in patients with mandible edentulousness treated by means of four implant-supported dental prostheses of various types.

105 patients were examined at the premises of the Center of Dentistry of the University Clinic of Ivano-Frankivsk National Medical University. 30 individuals out of 105 at the age of 23-28 with intact dentition, without somatic pathology were included in the control group.

75 patients with mandible edentulousness underwent clinical examination, prosthodontic treatment, and follow-up. 3 clinical groups (Group I; II; III) were formed from this cohort of patients depending on the structural features of the manufactured dental prostheses.

We conducted electromyography of mm. masseter dexter et sinister to the patients of the examination groups (n = 75) and the control group (n = 30) in order to achieve the objective of the research. The examination was performed by means of two-channel electroneuromyographic complex "Neuro-EMG-Micro" ("Neurosoft") in the functional diagnostics office at the premises of the Department of Dentistry of Postgraduate Study Faculty at IFNMU.

Quantitative indicators of bioelectrical activity of the right and left masticatory muscles were analyzed. Namely, the average values of the maximum amplitudes (μV) when performing the test of maximum bite force were analyzed. Recording of electromyographic indicators was performed before the prosthodontic treatment, 14 days after the fixation of the dental prosthesis, in 6 months and 12 months after the dental prosthesis functioning in order to study the dynamics of changes in the indicators of the examination groups.

Electromyography recording and analysis of the findings in the individuals of the control group was performed once.

Analyzing quantitative indicators of electromyographic examination significant differences in the dynamics of an increase in the indicators in 12 months compared to the initial indicators depending on the type of fixed dental prosthesis (subgroup A $p_{I-III} < 0.001$; subgroup B $p_{I-III} < 0.001$) and the order of prosthodontic treatment ($p_{A-B} < 0.001$ for all groups of patients) were observed.

- 1) Despite the fact that bioelectric indicators of mm. masseter dexter et sinister activity in the patients of the examination groups approximated to the indices of the control group, the dynamics of change was not equivalent and depended on the type of the dental prosthesis.
- 2) The dynamics of an increase in the indicators of the patients in the examination groups differed by growth, however, the greatest increase was recorded in the period of "14 days" – "6 months" after the fixation of the dental prosthesis.
 - On performing the test of maximum bite, the indicators of the masticatory muscles bioelectrical activity increased during the period named "before the treatment" – "12 months of functioning" most of all in IIIA examination group – by 66.52% ($p_d < 0.001$) on the right and by 76.37% ($p_d < 0.001$) on the left; and IIIB examination group – by 61.63% ($p_d < 0.001$) on the right and 67.20% ($p_d < 0.001$) on the left. The lowest indicators have increased in patients of IA examination group – 39.98% ($p_d < 0.001$) on the right and 39.95% ($p_d < 0.001$) on the left and IB examination group – by 32.48% ($p_d < 0.001$) on the right and by 34.75% ($p_d < 0.001$) on the left.

Keywords: electromyography, edentulousness, dental implantation.

Introduction. Improvement of the methods of functional and aesthetic rehabilitation of patients with edentulousness is extremely relevant today due to the prevalence of the pathology [1]. The criterion for the successful prosthodontic treatment is the quality of life and the level of functional status [2].

However, the problem exists that neuromuscular coordination and masticatory muscle activity remain impaired in patients with edentulousness, especially on the mandible, even in case of proper prosthetic rehabilitation [3]. This gives grounds to search for new methods of

improving the protocols of edentulousness prosthodontic treatment.

Research rationale. Electromyography (EMG) is the gold standard in the diagnosis of the masticatory muscles functional state [4]. The combination of the qualitative and quantitative indicators obtained from the results of EMG examination provides an opportunity to visualize the picture of the neuro-muscular apparatus of the maxillofacial system. This is very important for an objective analysis of the level of muscles adaptation to the new conditions which certainly affects the quality of the dental health.

The objective of the research: to define the dynamics of changes in bioelectric activity of mm. masseter dexter et sinister in patients with mandible edentulousness treated by means of four implant-supported dental prostheses of various types.

Materials and methods. 105 patients were examined at the premises of the Center of Dentistry of the University Clinic of Ivano-Frankivsk National Medical University. 30 individuals out of 105 at the age of 23-28 with intact dentition, without somatic pathology were included in the control group.

75 patients with mandible edentulousness underwent clinical examination, prosthodontic treatment, and follow-up. 3 clinical groups (Group I; II; III) were formed from this cohort of patients depending on the structural features of the manufactured dental prostheses:

- a conventionally removable four implant-supported dental prosthesis was manufactured for the patients included in Group I (n = 25) [5];

- Group II included the patients (n = 25) who were fixed a complete removable bar-retained four implant-supported dental prosthesis manufactured according to the conventional technique [6];

- Group III included the patients (n = 25) who were fixed a bar-retained four implant-supported dental prosthesis according to our improved method for the purpose of functional and aesthetic rehabilitation [7].

2 subgroups of patients were formed in each of the groups depending on the order of the prosthodontic treatment of mandible edentulousness:

- Subgroups A included the patients with the primary need for the prosthodontic treatment of the edentulousness;

- Subgroups B included the patients with recurrent need for the prosthodontic treatment.

Thus, clinical examination groups were formed (Fig. 1).

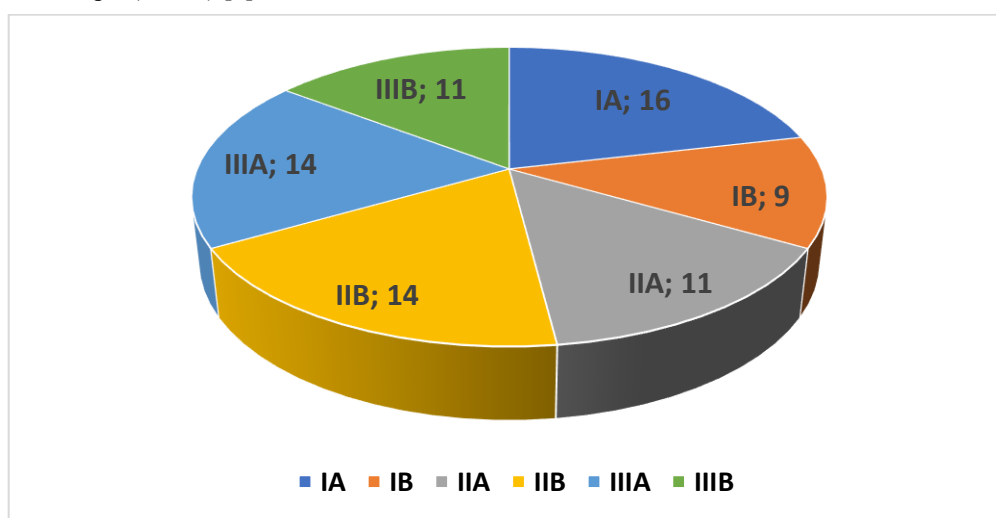


Fig. 1. Distribution of patients in the examination groups.

We conducted electromyography of mm. masseter dexter et sinister to the patients of the examination groups (n = 75) and the control group (n = 30) in order to achieve the objective of the research. The examination was performed by means of two-channel electroneuromyographic complex “Neuro-EMG-Micro” (“Neurosoft”) in the functional diagnostics office at the premises of the Department of Dentistry of Postgraduate Education Faculty at IFNMU.

Quantitative indicators of bioelectrical activity of the right and left masticatory muscles were analyzed. Namely, the average values of the maximum amplitudes (μV) when performing the test of maximum bite force were analyzed. Recording of electromyographic indicators was performed before the prosthodontic treatment, 14 days after the fixation of the dental prosthesis, in 6 months and 12 months after the dental prosthesis functioning in order to study the dynamics of changes in the indicators of the examination groups.

Electromyography recording and analysis of the findings in the individuals of the control group was performed once.

The STATISTICA 10 program was used for the statistical processing of the obtained results. Using the

descriptive statistics, all quantitative data obtained in the study were first checked for the type of their distribution with the use of the Shapiro-Wilk test.

In order to describe the central tendency of the quantitative data corresponding to the Gauss’s law, the following interval ($M \pm m$) was used: Arithmetic Mean \pm Standard Error. Student’s t-test was applied to assess the reliability of the differences of the obtained results in comparison with the control group, between the data on the right and on the left, between primary and secondary cases.

A non-parametric method for three or more dependent comparison groups, namely Friedman’s ANOVA and Kendall’s coefficient of concordance was used in order to assess the reliability of the data changes in dynamics (before the treatment, after 14 days, in 6 months and 12 months) within each of the comparison groups.

A non-parametric method for three or more independent comparison groups, namely Kruskal-Wallis ANOVA & Median Test, was used to assess the reliability of the difference in the data of all three comparison groups at each of the study points (before the intervention, after 14 days, in 6 months and 12 months).

The statistical method of the research was conducted at the premises of the Department of Social

Medicine and Public Health of IFNMU (Professor O.Z. Detsyk).

in the patients of the examination groups before the prosthodontic treatment, at the follow-up stages and in the individuals of the control group

Results of the research. Table 1 presents the results of the EMG study of mm. masseter dexter et sinister

Table 1

Results of electromyographic examination of mm. masseter dexter et sinister in case of maximum bite force (μV)

Group	n	Location	Before the treatment		14 days		6 months		12 months		p_d
			M	$\pm m$	M	$\pm m$	M	$\pm m$	M	$\pm m$	
IA	16	on the right	584.0	17.4	608.4	16.3	728.2	8.7	817.5	10.5	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
		on the left	543.4	12.9	562.6	14.9	681.6	10.0	760.5	11.1	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
IB	9	p_{r-l}	>0.05		<0.05		<0.01		<0.001		x
		on the right	455.7	8.7	467.8	8.9	545.5	7.5	604.0	11.0	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
		p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		on the left	405.5	10.4	419.1	11.8	487.0	15.2	546.6	17.9	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
IIA	11	p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		p_{r-l}	<0.01		<0.01		<0.01		<0.05		x
		on the right	548.4	11.1	569.7	10.3	725.0	8.0	790.7	9.8	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
IIB	14	on the left	496.7	8.1	512.1	9.6	678.3	7.0	735.0	8.2	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
		p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		p_{r-l}	<0.01		<0.001		<0.001		<0.001		x
		on the right	447.9	8.0	460.5	7.1	563.2	5.7	607.3	6.4	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
IIIA	14	p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		p_{r-l}	<0.001		<0.001		<0.001		<0.001		x
		on the right	550.4	7.4	564.8	7.8	846.8	9.6	916.8	10.6	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
IIIB	11	on the left	486.1	9.2	504.8	8.5	786.7	8.4	857.3	9.3	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
		p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		p_{r-l}	<0.001		<0.001		<0.001		<0.001		x
		on the right	440.3	5.8	452.7	5.5	655.6	6.6	711.6	7.5	<0.001
		p_c	<0.001		<0.001		<0.001		<0.001		x
A (p_{I-III})	41	p_{A-B}	<0.001		<0.001		<0.001		<0.001		x
		p_{r-l}	<0.001		<0.001		<0.001		<0.001		x
B (p_{I-III})	34	on the right	>0.05		>0.05		<0.001		<0.001		x
		on the left	>0.05		>0.05		<0.001		<0.001		x
Control	30	on the right	1183.8	25.3	x				x		
		on the left	1151.0	23.3	x				x		
		p_{r-l}	>0.05		x				x		

Note: p – reliability of the data difference; p_d – in the dynamics; p_c – with the control; p_{r-l} – between the right and left; p_{A-B} – between the primary and repeated ones; p_{I-III} – between groups I, II, III.

The average values of the maximum amplitudes (μV) when performing the test of maximum bite force in the control group ($n = 30$) constituted:
- m.masseter dexter – 1183.83 μV ;

- m.masseter sinister – 1151.03 μV .
Tables 2-5 present the average values of maximum amplitudes (μV) for the right and left masticatory muscles in the patients of the examination groups IA and

IB when performing the test of maximum bite force. In addition to the obtained average quantitative indicators, the

tables show the percentage change in the value of indicators in the time intervals between the examinations.

Table 2

Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	584.0±17.4	4.17%	24.69%	39.98%
14 days		608.4±16.3	19.70%	34.37%
6 months			728.2±8.7	12.26%
12 months				817.5±10.5

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 3

Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	543.4±12.9	3.52%	25.42%	39.95%
14 days		562.6±14.9	21.15%	35.19%
6 months			681.6±10.0	11.59%
12 months				760.5±11.1

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 4

Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	455.7±8.7	2.64%	19.70%	32.48%
14 days		467.8±8.9	16.62%	29.08%
6 months			545.5±7.5	10.68%
12 months				604.0±11.0

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 5

Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	405.5±10.4	3.36%	20.09%	34.75%
14 days		419.1±11.8	16.19%	30.36%
6 months			487.0±15.2	12.20%
12 months				546.6±17.9

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Tables 6-9 show the electromyography results of the patients with a complete removable bar-retained dental

prosthesis manufactured according to the conventional technique (examination group IIA and IIB).

Table 6
Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IIA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	548.4±11.1	3.88%	32.22%	44.19%
14 days		569.7±10.3	27.28%	38.80%
6 months			725.0±8.0	9.05%
12 months				790.7±9.8

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 7
Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IIA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	496.7±8.1	3.09%	36.56%	47.97%
14 days		512.1±9.6	32.47%	43.54%
6 months			678.3±7.0	8.36%
12 months				735.0±8.2

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 8
Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IIB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	447.9±8.0	2.81%	25.73%	35.57%
14 days		460.5±7.1	22.29%	31.86%
6 months			563.15	7.83%
12 months				607.22

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 9
Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IIB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	394.52	3.79%	28.41%	36.52%
14 days		409.46	23.73%	31.53%
6 months			506.6±8.6	6.31%
12 months				538.6±9.6

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Tables 10-13 show the electromyography results of the masticatory muscles on the right and left and the percentage dynamics of changes in bioelectrical activity in the patients of the groups IIIA and IIIB.

Table 10
Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IIIA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	550.4 \pm 7.4	2.61%	53.85%	66.52%
14 days		564.8 \pm 7.9	49.93%	62.28%
6 months			846.8 \pm 9.6	8.24%
12 months				916.8 \pm 10.6

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 11
Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IIIA examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	486.1 \pm 9.2	3.85%	61.84%	76.37%
14 days		504.8 \pm 8.5	55.84%	69.83%
6 months			786.7 \pm 8.4	8.98%
12 months				857.3 \pm 9.3

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 12
Dynamics of changes (%) of average indicators of m.masseter dexter bioelectrical activity (μV) in the patients of IIIB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	440.3 \pm 5.8	2.82%	48.91%	61.63%
14 days		452.7 \pm 5.5	44.83%	57.20%
6 months			655.6 \pm 6.6	8.54%
12 months				711.6 \pm 7.5

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Table 13
Dynamics of changes (%) of average indicators of m.masseter sinister bioelectrical activity (μV) in the patients of IIIB examination group

Monitoring period	Before the treatment	14 days	6 months	12 months
Before the treatment	385.5 \pm 10.6	5.14%	53.41%	67.20%
14 days		405.3 \pm 9.3	45.91%	59.02%
6 months			591.3 \pm 6.5	8.99%
12 months				644.4 \pm 6.7

$p_d < 0.001$, $p_c < 0.001$

Note: p – reliability of the data difference: p_d – in the dynamics; p_c – with the control.

Discussion of the results. Analyzing the results presented in the Tables 2-13, some regularities were clearly observed. In particular, the initial (before the prosthodontic treatment) average indicators of maximum amplitudes (μV) of mm. masseter dexter et sinister during the test of maximum bite force were higher both on the right ($p_{A-B} < 0.001$) and on the left ($p_{A-B} < 0.001$) in the patients with primary prosthodontic treatment of mandible edentulousness (subgroup A). Similar assumptions about the correlations between bioelectrical activity and the statute of

limitations for the loss of the last tooth on the jaw have been studied in the publication by O.V. Dobrovolsky [8].

According to the results of our research, the next regularity was the predominance of m.masseter dexter activity over the symmetric ones within one group (IA- $p_{r-l} > 0.05$; IB-IIIB – $p_{r-l} < 0.001-0.01$). Analyzing the literature sources, no clear data has been presented on which of the symmetrical masticatory muscles has a higher level of bioelectrical activity in the patients with edentulousness.

Facial structure influences the difference in activity indicators [9].

Analyzing quantitative indicators of electromyographic examination presented in the Tables 2-13, significant differences in the dynamics of an increase in the indicators in 12 months compared to the initial indicators depending on the type of fixed dental prosthesis (subgroup A $p_{I-III} < 0.001$; subgroup B $p_{I-III} < 0.001$) and the order of prosthodontic treatment ($p_{A-B} < 0.001$ for all groups of patients) were observed.

An increase in the indicators in all groups was at the level of 2.64% -5.14% ($p_d < 0.001$) in the period "Before the treatment" – "14 days after the fixation of the dental prosthesis". Thus, the dynamics of approaching the indices of the individuals with intact dentitions was insignificant. This growth indicated only the beginning of the normalization of the masticatory muscles functioning.

It is worth noting that the average indicators of maximum amplitudes (μV) were significantly closer to the indicators of the control group in the period from the 14th day from the moment of dental prosthesis fixation up to the 6th month of the functioning ($p_d < 0.001$). As a matter of fact, the most significant changes in bioelectrical activity occurred during this period of time between the examinations. However, the dependence of changes on the type of the chosen method of prosthodontic treatment was clearly observed.

According to the Tables 2-13, a difference in the percentage dynamics of the indicators in case of complete conventionally removable dentures (the patients of the examination groups IA (Table 2-3) and IB (Table 4-5)) and complete removable dental prosthesis on the mandible (examination groups IIA (Tables 6-7) and IIB (Tables 8-9)) and the improved method (examination groups IIIA (Tables 10-11) and IIIB (Tables 12-13)) was observed. In particular, the highest increase (by 21.15%) among the patients of examination group I was noted during the examination of the left masticatory muscle in the patients with primary prosthodontic treatment.

The highest percentage of the increase in quantitative indicators in the period of "14 days after the fixation" – "6 months after the fixation" in the patients of examination group II was recorded in m.masseter sinister in the patients of the examination group IIA, namely by 32.47% ($p_d < 0.001$).

Higher dynamics changes were observed in the patients of examination group III. In particular, the change in m. masseter sinister by 55.84% ($p_d < 0.001$) in the patients of the examination group IIIA indicated the accelerated dynamics of increase in bioelectrical activity and approximation to the indices of the control group in comparison with the patients of the examination groups I and II.

We considered the indicator of the masticatory muscles biopotentials in 6 months after the fixation of the dental prosthesis to be the main one in understanding the muscles restructuring and response to the treatment. Since, according to the literature data [10, 11], this is the period of time during which the masticatory muscles fully adapt to the new conditions.

The level of increase in the indices in the period of "6 months" – "12 months" testified predominantly completed adaptation of the studied muscles after 6 months of dental prosthesis functioning. The percentage dynamics of

increase by 6.31% -12.20% ($p_d < 0.001$) proved the fact of adaptation and stability of functioning.

The final stage in the analysis of our research was the assessment of the final changes in the bioelectrical activity of the masticatory muscles. The most significant approximation of the biopotentials of the masticatory muscles when performing the test of maximum bite to the indices of the control group during the period named "before the treatment" – "12 months of functioning" was observed in the patients of the examination group III (IIIA – 66.52% ($p_d < 0.001$) on the right and 76.37% ($p_d < 0.001$) on the left, IIIB – 61.63% ($p_d < 0.001$) on the right and 67.20% ($p_d < 0.001$) on the left). In comparison, the dynamics of indicators increase in the patients of the examination group I was substantially lower (IA – 39.98% ($p_d < 0.001$) on the right and 39.95% ($p_d < 0.001$) on the left; IB – 32.48% ($p_d < 0.001$) on the right and 34.75% ($p_d < 0.001$) on the left). This was probably caused by the design peculiarity of a complete conventionally removable denture with shortened dentitions. That actually affected the masticatory efficiency and masticatory muscles tone as it has been previously demonstrated in a research by Seifi M et al. (2017) [12] and Delavia et al. (2012) [13].

Conclusions:

- 1) Despite the fact that bioelectric indicators of mm. masseter dexter et sinister activity in the patients of the examination groups approximated to the indices of the control group, the dynamics of change was not equivalent and depended on the type of the dental prosthesis.
- 2) The dynamics of an increase in the indicators of the patients in the examination groups differed by growth, however, the greatest increase was recorded in the period of "14 days" – "6 months" after the fixation of the dental prosthesis.
- 3) On performing the test of maximum bite, the indicators of the masticatory muscles bioelectrical activity increased during the period named "before the treatment" – "12 months of functioning" most of all in IIIA examination group – by 66.52% ($p_d < 0.001$) on the right and by 76.37% ($p_d < 0.001$) on the left; IIIB examination group – by 61.63% ($p_d < 0.001$) on the right and 67.20% ($p_d < 0.001$) on the left.

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ЗМІНИ БІОЕЛЕКТРИЧНОЇ АКТИВНОСТІ MUSCULUS MASSETER У ЧАСІ ПРИ ЛІКУВАННІ ПОВНОЇ ВІДСУТНОСТІ ЗУБІВ НА НИЖНІЙ ЩЕЛЕПІ

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Резюме. Мета. Встановити динаміку змін біоелектричної активності mm. masseter dexter et sinister у пацієнтів із повною відсутністю зубів на нижній щелепі, пролікованих шляхом виготовлення ортопедичних конструкцій різних типів з опорою на чотири імплантати.

Клінічне обстеження, ортопедичне лікування, спостереження проведено в 75 пацієнтів із повною відсутністю зубів на нижній щелепі. З цієї когорти пацієнтів сформовано 3 клінічні групи (група I; II; III) у залежності від конструкційних особливостей виготовленої ортопедичної конструкції.

Нами проведено електроміографічне обстеження mm. masseter dexter et sinister у пацієнтів груп обстеження (n=75) та осіб контрольної групи (n=30).

При аналізі кількісних показників електроміографічного обстеження зафіксовано значні відмінності у динаміці зростання значень через 12 місяців, порівнюючи із вихідними показниками, у залежності від типу зафіксованої ортопедичної конструкції (підгрупи А $p_{I-III} < 0,001$; підгрупи Б $p_{I-III} < 0,001$) та черговості ортопедичного лікування ($p_{A-B} < 0,001$ для всіх груп пацієнтів).

За період «до лікування»–«12 місяців функціонування» показники біоелектричної активності власне жувальних м'язів при виконанні проби максимального стиснення щелеп найвище зросли у групі IIIА – на 66,52 % ($p_d < 0,001$) для m. masseter dexter та на 76,37 % ($p_d < 0,001$) для m.masseter sinister; та у групі IIIБ – на 61,63 % ($p_d < 0,001$) справа та на 67,20 % ($p_d < 0,001$) зліва. Найнижчий ріст показників зафіксований у пацієнтів групи IA на – 39,98 % ($p_d < 0,001$) справа та 39,95 % ($p_d < 0,001$) зліва та групи IB – на 32,48 % ($p_d < 0,001$) справа та на 34,75 % ($p_d < 0,001$) зліва.

Ключові слова: електроміографія, повна відсутність зубів, імплантати.

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