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INDIVIDUAL SELECTION OF SILICONE IMPRESSION MATERIALS IN PROSTHETIC PATIENTS INTOLERANT OF PROSTHETIC MATERIAL

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Summary: For individual selection of silicone material in prosthetics various defects dentition developed a method of assessing the state of the index prosthetic area, which allows you to clearly choose individually impression material that is most appropriate for the patient. For clinical use, the developed index, we conducted an analysis of the effectiveness of the various features of silicone materials 8 members is the most popular C-silicone impression materials. Our studies have shown that the quality of the obtained models for silicone impressions volunteers group 1 15.5% lower than in the second (1st - 24.3% of defective models, group 2 - 8.8%). Developed index score allows a simple level to assess the perception of clinical conditions for obtaining high-quality impression silicone material as comfortable as possible for the patient and to pick up the necessary material, the right to apply it in each clinical situation. Also avoid contact stomatitis using silicone impression material.

Keywords: silicone impression material, individual sensitivity, the index score.

Formulation of the problem in general and its connection with important scientific and practical tasks. The last decades are characterized by the deterioration of the ecological situation in the world. Widespread usage of polymers in everyday life and human nutrition, increasing content of various macro- and microelements in drinking water leads to the increased level of allergy among population [1].

Particularly relevant increase of this level is for doctors, using various chemical compounds and polymers, in particular, in their practice. One of the aspects of orthopedic dentist activity is the usage of different orthopedic polymer substances for a long or short term insertion into the oral cavity.

Analysis of recent achievements and publications, in which was started the solution of the problem. Issues connected with the complexity of biological compatibility and allergy to plastic removable and fixed dentures are often debated in scientific journals [2-4]. It was proposed a large number of treatment methods and prevention of these complications [5-7]. However, issues, related to the usage of materials which come into contact with the body is only 5-20 minutes when you visit a dentist-orthopedist, pay very little attention. [8] But even in these few works are clear scientific interest in the solution of the issue of individual selection of silicone impression material based on patient tolerability and optimal quality for manufacture of dentures.

Formulation of the purposes of article. That is why we set a purpose - to develop a universal clinical easy way to choose individual parameters for the usage of silicone materials, such as primary impression material of clinic of orthopedic dentistry.

Materials and methods. With this purpose we had developed a method of selecting the impression material for the usage to patients with problems of biological compatibility of materials in anamnesis (intolerance of structural materials in

anamnesis, presence of foreign bodies in the body of the patient, complicated allergic status) [9].

For the evaluation of oral cavity during the first examination was evaluated the status of the patient in five selected features, in a certain way classified with the help of alphabetic and numeric designation, and then in accordance with these codes by experimental way compared the properties of silicone materials during the examination of 206 volunteers, who were divided into two groups (1st - 115; 2nd - 91). In the first group, all necessary for the work silicone impressions were received by material «Speedex», as the most common in the domestic market. [10] Impressions of the second group of patients were taken according to our developed scheme.

During the first examination of the patient evaluated the succeeding characteristics (the level of expression of allergic reaction to the material, the complexity of the relief of prosthetic bed - the presence of expression equator and under inner teeth, etc; expression of vomitory reflex, dryness of mucous membrane, accuracy class of prosthesis, and so on) to the following criteria:

- 1 – lack of expressed feature;
- 2 – moderately expressed feature;
- 3 – obviously expressed feature;
- 4 – dominant feature.

Letters are selected by the English signs characteristic values, namely: A- allergic reaction; R - relief; V - vomiting; D - dryness; P – prosthesis.

For clinical usage of the developed index, we had conducted an analysis of the effectiveness of the various features of silicone materials, 8 exponents (Table 1) of the most affordable on the market C-silicone impression materials.

For the studying on the basis of clinical data we had given the above mentioned materials indexes on the basis of their known properties (Table 2). To this end, they had tied the physical and chemical properties of the materials and the clinical condition of prosthetic bed. The allergic reaction was determined traditional skin test [11].

Statement of the main material of research with the justification of scientific results. Therefore, it was obtained a scheme on the basis of which we can quickly determine the identifications to the application of another silicone material.

For example, if a woman went to the clinic with the defect of front part of the lower tooth row with the marked vomiting reflex (V3), with the involved allergic status (bronchial asthma in anamnesis, presence of household contact allergy) - (A3), with minor denudation dental necks (R2), undetermined atrophy of alveolar process (D1) and with the aim to produce a non-removable metal-ceramic bridge denture, we define for her the index of choice of silicone material: A3-V3-D1-R2. For this index according to our developed classifier we need to apply material "Silagum" (Germany), as it contains anti vomiting admixtures, has the duration of work in the oral cavity (the minimum – 1,5 minutes), the accuracy is 20 microns, consistence is 1,4.

Table 1

The selection of silicone materials according to its physical and chemical, organoleptic properties (ISO 4823-1988)

Exponents	Company	State	Colour durability	Consistence, mm	Total working time, s	Dimensional accuracy of models, mm	Linear shrinkage, mm
Speedex	Coltene	Switzerland	36,2±1,2	32,0±1,8	120,0±2,5	10,2±0,3	0,40±0,05
Silagum	DMG	Germany	24,0±0,5	34,5±1,7	105,0±8,5	10,3±0,4	1,17±0,22
Stomaflex	Spofa Dental	Czech Republic	18,5±1,1	37,0±1,7	140,0±5,6	10,2±0,4	0,02±0,005
Zeta Plus	Zhermack	Italy	22,5±1,5	34,0±1,4	100,0±5,4	10,1±0,4	0,65±0,04
Coltex	Whaledent	Switzerland	24,4±1,4	34,0±1,5	96,6±4,4	10,3±0,2	0,44±0,09
Express	3M ESPE	Germany	23,3±1,3	33,4±1,1	98,4±3,8	10,4±0,4	0,58±0,08
Hydrosil	Dentsplay	USA	26,4±0,6	36,6±2,0	90,0±7,4	10,5±0,1	0,40±0,02
Xantopren	Bayer	Germany	27,7±0,9	39,0±1,7	101,9±4,9	10,2±0,2	0,55±0,05

Table 2

The principle of code appropriation of silicone material for its clinical application, ball

Exponents	**Duration of the impression in the oral cavity, minutes**	**t**	**Colour, ball**	**C**	**Organoleptic properties**	**S**	**Consistence**	**D**	**Accuracy, mkm**	**P**
Speedex	2,2	3	1,9	3	1,1	3	2,0	4	20	1
Silagum	1,5	1	1,8	3	0,5	4	1,4	3	40	2
Stomaflex	2,1	2	2,1	2	1,5	2	1,0	1	20	1
Zeta Plus	1,8	1	1,3	4	0,7	4	1,1	2	40	2
Coltex	2,1	2	2,1	2	1,4	3	1,2	2	20	1
Express	2,2	3	2,6	1	1,6	2	1,3	3	70	4
Hydrosil	2,5	4	2,1	2	1,8	1	1,3	3	70	4
Xantopren	2,6	4	2,8	1	1,6	2	1,8	4	70	4

Our investigations had shown that the quality of the obtained models of silicone impressions in the first group of volunteers is 15,5% lower than in the second group (1st – 24,3% of defective models, 2nd – 8,8%). (Figure 1).

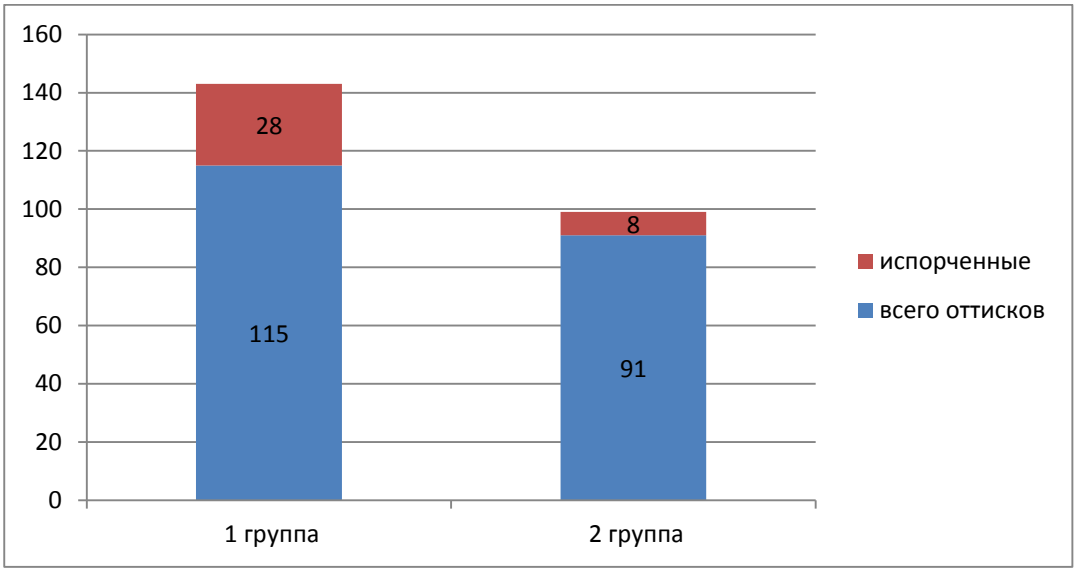

Figure 1. T Analysis of the quality of impressions obtained by different silicone materials, pieces.

For presentation, we give another example of removable prosthesis.

Patient K., 45 years old, was diagnosed a defect of lower tooth row I class by Kennedy. Vomiting reflex is almost moderately expressed (V2), with no burdened allergic status (A1), with the mobility of remaining teeth of the first degree and a high crown part (R2), expressed even atrophy of alveolar process (D2).

It was decided to make clasp prosthesis with splinting elements and for this purpose to use a silicone impression mass to produce a working model. Index of choosing of impression material was A1-V2-D2-R2. For this index according to our developed classifier we need to apply "Stomaflex" (Czech Republic), as it has an average duration of work in the oral cavity – 2,1 minutes, the accuracy is 20 microns, consistence – 1,0 and consistency - 1.0 and quite tolerably organoleptic properties - 1.5 balls.

Conclusion. Developed index score allows on a simple level to assess the perception of clinical conditions for obtaining high-quality impression of silicone material as comfortable as possible for the patient and to match the necessary material, the right application it in each clinical situation. It also helps to avoid contact stomatitis using silicone impression materials.

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