Of partial defects of the dental rows of dynamic study of the state of the mucosa of the oral cavity in the new conditions of functioning

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ABSTRACT

Despite the rapid development of dentistry and advances in the prevention of diseases of the maxillofacial region, implantology, and the treatment of dental diseases, the number of patients who need prosthetics with removable orthopedic structures of dentures remains high, and only increases with age, due to the increasing rate of aging society of the planet (M.Yu. Ogorodnikov, 2007; V.I. Shemonaev, 2012; E.S. Kalivradzhian, 2013; E.A. Zholudev, 2014; CE. Bragin, 2014; L.D. Veisheim, 2014). Among the reasons for the high demand for orthopedic treatment with removable dentures, the leading position is still held by insufficient sanitation of the oral cavity, untimely access of patients to the dentist. In addition, an important role is played by the problem of imperfection of materials and technologies used for the manufacture of dentures, leading to a deterioration in the condition of the dentition.

1. INTRODUCTION

An indicator of the quality of orthopedic treatment is the timing of adaptation of the mucous membrane of the prosthetic bed, which is very sensitive to exposure to new functional loads arising under the basis of a removable denture structure. As a result of the study of the state of the mucous membrane, the presence of an inflammatory reaction in the form of foci with color of varying intensity was revealed in all groups of patients. The average value of the inflammatory response of the mucous membrane of the prosthetic bed in patients of two groups is presented in Table 1.

<table>
<thead>
<tr>
<th>Time</th>
<th>1 gram (Kvadrotti)</th>
<th>2 gram (Ftorax)</th>
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</thead>
<tbody>
<tr>
<td>3 days</td>
<td>295,2±0,03</td>
<td>462,2±0,04</td>
</tr>
<tr>
<td>1 Week</td>
<td>139,6±0,01</td>
<td>314,8±0,03</td>
</tr>
<tr>
<td>1 month</td>
<td>-</td>
<td>75,2±0,02</td>
</tr>
<tr>
<td>3 month</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 month</td>
<td>-</td>
<td>45,1±0,03</td>
</tr>
</tbody>
</table>

Note. Statistically significant differences at p <0.05
The analysis of the obtained macrohistochemical data indicates that the highest average values of the inflammatory reaction are observed in the first week after the imposition of removable prostheses. Moreover, the reaction of the mucous membrane depends on the properties of the basis and is more pronounced under the influence of rigid structures, in comparison with thermoplastic prostheses, Figure 1.

![Fig. 1 Reaction of the mucous membrane to different materials of the bases of removable dentures, mm²](image)
The average area of inflammation of the mucous membrane under rigid bases in patients of group No. 2 was 157.2 ± 0.31 mm² larger than in patients of group 1 using Kvadrotti prostheses.
After a week or more, in all groups, there is a decrease in the average indicators of inflammation of the underlying tissues. However, one can note a different rate of abatement of inflammatory processes in response to the functional effect of chewing load. Thus, the average area of the inflammation reaction in patients using removable dentures, during the week of adaptation, a decrease in values was revealed.

In patients of the first subgroup, 1a, the average value of the inflammatory response after a week was 139.6 ± 0.01 mm, which decreased by almost half, and amounted to 55.8%.

In patients of the second group, using rigid prostheses, the foci of the inflammatory reaction were the largest, and their mean value was -314.8 ± 0.03 mm. This corresponds to only 32% change in adaptation processes.

The dynamics of changes in the state of the oral mucosa under the bases of denture designs for the entire observation period is shown in Figure 2.

![Fig. 6 Dynamics of the state of the oral mucosa](image)

As the data of macrohistochemical studies show, by the end of the month, in most patients, the mucous membrane of the prosthetic bed was practically adapted to the new conditions of functioning.

In group No. 1, no foci of inflammation were found, and in the second group - 75.2 mm.

After three months, all patients were adapted, and no inflammatory reaction of the mucous membrane was detected.

Analysis of long-term observations, after six months showed that users of removable prostheses made of polymer "Kvadrotti" had practically no foci of inflammation, in group 1 they were not found, in 16 the area was -24 mm. And in the second group, a small reaction appeared, amounting to 45.1 mm. At the same time, almost all patients were well adapted to prostheses and had no complaints.

The data obtained allow us to assume that during this period signs of the process of atrophy of the underlying tissues of the prosthetic bed are already manifested, especially under the rigid basis of the removable prosthesis. In patients of the first group, using an elastic base, this process is less pronounced, but the visualized reaction in the group of patients, on average, 24 mm, indicates the inevitability of a negative effect of nonphysiological pressure on the underlying tissues. The absence at the moment in the main subgroup indicates the advantage of the surface quality of the removable structure. The loose fit of the removable prosthesis, due to the changes in the underlying tissues, further leads to trauma, inflammation and loss of tissues of the prosthetic bed.

Therefore, analyzing the data obtained, we can conclude that an inflammatory reaction of the mucous membrane of the prosthetic bed occurs under the basis of any design of a removable prosthesis.

However, both in the initial adaptation period and after the observation period, under the baseline treated by the proposed method, the smallest area of inflammation foci of the mucous membrane of the prosthetic bed is revealed.

The data indicate: in a short period, within a week, the inflammatory response of the mucous membrane of the prosthetic bed in patients of group 1, under the baseline, subsides by 56%.

The performed assessment reveals a faster dynamics of a decrease in the inflammatory process of the mucous membrane of the prosthetic bed in patients of the first group, which confirms the importance of the surface of the removable denture structure and indicates the preference of using prostheses made of thermoplastic thermoplastic polymers.

After prosthetics, a dynamic examination of the oral cavity is a necessary and objective condition for assessing the functional and hygienic state of mucous membranes and dentures for the prevention of dental diseases, possible deposition of soft and hard plaque on prostheses, the development of foci of inflammation in the marginal periodontium and pathogenic microflora.

Conducted clinical and stomatoscopic studies have shown that after prosthetics in patients of the 2nd group, up to 10 and 90 days, significant changes were revealed in the oral mucosa and the prosthetic bed. The mucous membranes of the border of the lips and cheeks were in most cases moist, pink in color with a transparent epithelial cover. At the same time, in 3 (5.9%) patients, by the 10th day of observation, peeling of the surface of the red border of the lips was noted, and in 8 (15.7%) patients there was an increase in the contours of the underlying blood vessels, compaction of the mucous membrane of the cheek at the level of contact of the dentures of the upper and the lower jaw. Swelling of the buccal mucosa was observed in 4 (7.8%), three (5.9%) patients complained of increased salivation and 11 (21.6%)
hypersalivation. In 7 (13.7%) by day 10 and in 13 (25.5%) patients, the processes of inflammation and erosion, pressure ulcers on the upper and in most of the lower jaw were revealed, which disappeared after the prosthesis was corrected.

It should be noted that by the 10th day of observation, grade I dental prostheses were contaminated in 12 (23.5%) patients, grade II in 4 (5.9%), grade III and IV were not detected. On the 90th day, I degree of contamination of complete removable dentures was detected in 14 (%) patients, II degree in 29 (%), III degree in 8 (%). For 180 days of wearing prostheses, the I degree of contamination was found in 7 (%), II degree in 16 (%), III in 21 (%) and IV degree in 6 (%), and by 360 days - in 3 (%) and 11 ( %), 27 (%) and 10 (%) patients.

Thus, the analysis of the frequency of cases of detection of contamination of full removable dentures increases. At the same time, with an increase in the terms of their wearing, the number of cases with high III and IV degree of contamination of prostheses increases. At the same time, the level of contamination of prostheses with I and II degrees remains at a consistently high level.

Along with the violation of the hygienic state in 28 (54.9%) patients 2 gr. By the 90th day, cases of soft plaque deposition on the surface of fully removable dentures were revealed and in 9 (17.6%) cases of hard plaque, which required polishing of dentures. By the 180th day of the study, in this group of patients, almost at the same place (mainly in the area of the anterior teeth on the lingual side) and in the area of the chewing teeth on the buccal side, soft plaque was revealed in 40 (78.4%) and in 11 (21.6 %) hard dental plaque (Figure 3.2), which also required additional efforts to process and polish the dentures, and by 360 days in patients 2 gr. revealed in 19 (37.3%) - mixed type of formation of soft and hard plaque, soft (5.9%) patients and hard - 29 (56.9%).

As a result of clinical studies, a clear understanding of the complexity, importance and necessity of choosing removable denture constructions made of thermoplastic polymers and their further hygienic care has been formed.

At the stages of manufacturing dental prostheses from thermoplastic polymers, it is necessary to adhere to a clear manufacturing algorithm. All touches of the polishing toolkit should be smooth, superficial, without any pressure. The mode of operation should be intermittent. Processing is carried out necessarily with intensive water cooling. Use grinding equipment at minimum speed. The speed of the rotating abrasive tool should be no more than 5,000 rpm; the entire outer surface of the polymer prosthesis is treated with successive reciprocating movements.

Recommendations for the tools used.
- Use a clear sequence of abrasive tools:
  - carbide cutters;
  - sintered diamond heads;
  - napkin on a fabric basis, type 00 and / or 000;
  - shaped silicone polishers.

With increasing pressure, the cutting properties of the burs sharply decrease, and the sample surface loses its shape and deforms.

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