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MEDICAL SCIENCES

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CLINICAL JUSTIFICATION FOR THE USE OF CREAM FOR FIXATION OF COMPLETE REMOVABLE PLASTIC PROSTHESES

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Introduction. One of the current problems of orthopedic dentistry is to increase the functional efficiency of removable dentures and prevent atrophic changes in the supporting tissues of the prosthetic plate by improving the methods of manufacturing prostheses. The solution to this problem is directly dependent on specific clinical conditions [1]. Pronounced bony protrusions covered with a thin mucous membrane, the presence of zones with a large difference in the degree of compliance, acute alveolar ridge and other anatomical, physiological and topographic features of the toothless areas cause difficulties in using removable dentures [2]. Under the above clinical conditions of the bed, the base of the prosthesis should be differentiated, the appropriate layer of adhesive material should restore the damping properties of the thin mucous layer with low flexibility, and the unconditional

condition is the unloading of areas prone to atrophic processes and loading areas resistant to atrophy [3].

Traditional removable plastic prostheses will meet all the requirements only if they are made taking into account all the anatomical and physiological features of the patient's oral cavity. It is usually very difficult, and sometimes impossible, to make an "ideal" removable prosthesis, because a number of physiological and pathological processes that occur during tooth loss lead to numerous changes in the tissues of the oral cavity and their relief [5].

Improving the functional efficiency of complete removable prostheses, improving the adaptation of patients to them can be achieved by clinical differential studies: the degree of fixation, stabilization during masticatory function, uniform transfer of masticatory pressure to the underlying tissues, namely the design features of removable prostheses [5,6]. An example of the effect of excessive load on the alveolar process is its atrophy under the base of a removable plastic prosthesis, which is used to eliminate secondary deformations associated with vertical alveolar elongation. With the correct distribution of masticatory pressure transmitted by the base of the prosthesis to the prosthetic plate, atrophy of the alveolar processes is much slower, and sometimes not observed at all [9]. In clinical practice, most removable prostheses are made with a rigid, rarely with a two-layer base, due to the simplicity of manufacture and lower cost [2]. But these designs are not always able to provide positive treatment results, especially under adverse anatomical and topographic conditions of the prosthetic plate [1]. Therefore, there is a need to use adhesive materials to increase the fixation of complete removable dentures from the first days of prosthesis, which will solve the problem of sufficient fixation of the prosthesis and the ratio of base to prosthetic plate tissues in the process of adaptation and long-term use [4].

When solving the problem of fixation and stabilization of a removable prosthesis on the tissues of the prosthetic plate in removable prosthetics is not always taken into account the perception of the adhesive by the patient, as well as the

interaction of factors such as "prosthetic adhesive", "adhesive-oral mucosa", "adhesive-microflora mouth ", the biosafety of the adhesive composition [7].

To date, there is no perfect method of orthopedic treatment that would provide guaranteed fixation of the prosthesis on the edentulous mandible, especially in cases of its sharp atrophy or other numerous changes in the relief of the oral mucosa. The force of adhesion that occurs between the base of the prosthesis and the mucous membrane of the prosthetic plate due to oral fluid is not always sufficient for full fixation, and even more so, stabilization of complete removable prostheses, resulting in deteriorating their functional value [8]. The use of adhesives significantly increases the efficiency of fixation and stabilization of complete plastic prostheses under adverse anatomical and topographic conditions of the masticatory apparatus. Adhesive compositions are easy to use. They increase the functional value of not only newly made, but also old prostheses, reduce the displacement of the prosthesis from the prosthetic plate, the ingress of food under the prosthesis, so the use of the prosthesis becomes more comfortable [6].

By studying patients with one or both edentulous jaws on the basis of the Department of Orthopedic Dentistry of the University Dental Center of Kharkiv National Medical University, indicators of the condition of the mucous membrane were obtained, divided into types of edentulous jaws and statistics were collected using fixing adhesive cream «Stomafix».

The aim of the study: to evaluate the effectiveness of fixation adhesive material in complete removable prosthetics due to the distribution of edentulous jaws into types according to Schroeder and Keller classifications, taking into account the degree of atrophy of the bone base of alveolar processes and mucous membranes with using fixing adhesive cream «Stomafix».

Materials and methods. To create a differential distribution of masticatory pressure through the bases of prostheses on the tissues of prosthetic plates used clinical and technological techniques, namely, a special device designed by L.O. Lugova and O.S. Zhonnyk (declarative patent for utility model 14066 Ukraine, IPC A 245 5/0 (2006.1). Determination of the flexibility of the mucous membrane of the

prosthetic plate was performed in all patients with edentulous jaws until the functional imprint. Flexibility was determined in the area of the vestibular and oral slopes of the alveolar processes, their crest, as well as the anterior, middle and posterior parts of the palate, and the number of measurements was reduced to 6 on the upper and 7 on the lower jaws.

To determine the status of patients with complete absence of teeth on one or both jaws, 66 people (43 women and 23 men) aged 50 to 75 years were examined and who had prosthesis. The subjects sought orthopedic assistance with complaints of chewing and speech disorders, cosmetic inconveniences, inability to use previously made prostheses. At the time of anamnesis taking, it was found that 45 patients already used full removable dentures and due to complications such as: sharp deterioration of denture fixation (36 patients), denture breakage (5 patients), abrasion of artificial teeth on dentures (4 patients), patients preferred to abandon this type of dentition replacement. All other patients were satisfied with the manufactured prostheses, both freshly made and long-term use. All of these patients did not use adhesives to improve the fixation of complete removable dentures.

Differential flexibility of the mucosa in different areas of the prosthetic plate of patients with complete adentia on both or one of the jaws according to the Supply classification was taken into account, and divided into groups according to alveolar process atrophy according to Schroeder and Keller classifications. Also creating clinical groups of patients: the first included patients who used complete removable prostheses, and the second - who had prosthesis only non-removable structures. At the same time, patients of the studied groups used «Stomafix» adhesive cream to improve the adaptation and fixation of complete removable prostheses.

Results and discussion. Thanks to a special device designed by L.O. Lugova and O.S. Zhonnyk (declaratory patent for utility model 14066 of Ukraine, IPC A 5/0 245 (2006.1) examined 66 patients (43 women and 23 men) with complete adentia on both or on one of the jaws. Class 2 mucosa according to Supply, (53.6±9.4)% and (58.3±9.1)%, respectively. On the lower jaws (29.2±9.3)% of patients were diagnosed with class 4 mucosa, while on the upper jaws among this group of patients no signs of

class 4 were detected. The proportion of patients with upper edentulous jaws with class 3 mucosa ($32.1 \pm 8.8\%$) of the prosthetic plate, exceeded the same rate on the lower edentulous jaw ($12.5 \pm 6.3\%$).

In a small amount ($14.3 \pm 6.6\%$) we recorded 1 class of mucosa in patients with edentulous upper jaws in its absence in patients with lower edentulous jaw. This distribution of edentulous jaws with the presence of a prosthetic plate according to the Supply classification necessitated the need to compensate for the insignificant flexibility of the mucous membrane of the prosthetic plate in certain areas during treatment with removable prostheses through the use of cream for fixation. In cases of moderate susceptibility of the mucous membrane, the decision to use a cream for fixation was justified by taking into account the individual sensitivity of the tissues of the prosthetic plate of patients to mechanical stress.

In terms of alveolar bone atrophy toothless upper jaw, distance from the top of alveolar bone insertion strands and bridles, high palate by Schroeder, the vast majority ($46.4 \pm 9.4\%$) were type III, a bit less - the second type ($14.3 \pm 6.6\%$). Toothless lower jaws were classified according to Keller's classification. The vast majority of those treated are toothless lower jaws of III and II types, namely - ($45.8 \pm 9.2\%$) and ($25.0 \pm 7.8\%$), respectively. Destiny I and IV types amounted to ($16.7 \pm 6.7\%$) and ($12.5 \pm 5.8\%$).

In cases of atrophy of the alveolar process in treated patients, the decision to use a fixing cream was justified by taking into account the severity of bone formations within the prosthetic plate, namely: sublingual line, bony protrusions, exostoses, torus and mounds of the upper jaw.

As an example of treatment of patients with complete adentia with removable dentures using fixing cream "Stomafix", we present an extract from the outpatient card № 12274 patient N., born in 1945, who went to the clinic of orthopedic dentistry for orthopedic treatment. Diagnosis: toothless upper jaw type III according to Schroeder, mucosa class 2 according to Suplly; toothless lower jaw type II according to Keller, mucous membrane of the 2nd class according to Suplly, loss of masticatory efficiency 100% according to Agapov. The patient underwent complete removable

plastic prostheses for the upper and lower jaws, for which complete anatomical impressions were obtained from the upper and lower jaws with alginate impression material, the flexibility of the mucous membrane in certain areas of the prosthetic plate was measured. The lowest compliance was found on the oral slopes of the alveolar process on the upper jaw (0.39 mm) and in the area of the palatine suture (0.20 mm). On the lower jaw, the flexibility of the crest of the alveolar process (0.42 mm) was minimal. Individual base spoons were fitted to the prosthetic plates of the upper and lower jaws, the central ratio of the jaws was determined, and a functional impression was obtained from the prosthetic plates of the upper and lower jaws under the force of masticatory pressure. Replacement of wax with plastic was performed by compression method. After complete polymerization of the acrylic material, the prosthesis was disinfected and finished. When assessing the functional effectiveness of treatment of this patient, it was found that the masticatory pressure in the frontal area of the prosthetic plate is 3.05 kg, in the right and left side - 5.31 kg and 3.76 kg, respectively, which exceeds the masticatory pressure before using the fixing cream, by 5.2% - in the frontal area, by 50.4% - in the left side and by 43.9% - in the right side area.

However, in the process of adaptation of patients to prostheses using adhesive cream "Stomafix" for up to 3 days, as well as when measuring the values of masticatory pressure, masticatory efficiency, the patient did not complain of pain or discomfort.

Conclusions. According to studies, this distribution of types of edentulous jaws by classifications has compensated for significant atrophy of the alveolar bone by applying a fixation cream, which improves masticatory efficiency and prevents further atrophy of patients who use complete removable dentures for the first and second time.

With the help of adhesives you can achieve high rates of fixation and stabilization of the prosthesis: the result is visible immediately after application, which leads to a positive subjective assessment of the results of prosthetics by the patient, provides psychological comfort when talking and eating.

When using adhesives, the adaptation process is accelerated. Thus, the use of adhesives seems appropriate and, of course, promising for practical use, in order to improve the fixation of removable dentures and faster adaptation to them.

These studies allow us to recommend "Stomafix" JSC "Stoma" (Kharkiv, Ukraine) in the clinic of orthopedic dentistry.

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