

MEDICAL SCIENCES

AN IMPROVED TECHNIQUE FOR OBTAINING FUNCTIONAL IMPRESSIONS OF EDENTULOUS JAWS

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Abstract

Among the main problems of orthopedic dentistry, the treatment of complete absence of teeth occupies one of the most important places. The production of dentures with optimal functional efficiency includes, as a mandatory step, taking an impression from edentulous jaws. The impression is an information link between the doctor and the dental technician, and the accuracy of the impression largely determines the quality of orthopedic treatment.

Keywords: functional impressions, prosthetic bed, removable dentures.

Achieving reliable fixation and stabilization of complete removable dentures, as well as improving their functional and aesthetic characteristics is an urgent problem of modern orthopedic dentistry, since the fixation of dentures on edentulous jaws with unfavorable clinical conditions (with sharp degrees of atrophy of the alveolar processes according to Oxman's classification, in the presence of a genioglossus elevations and bony protrusions) is still a very difficult task [1].

The purpose of the study is to analyze an improved technique for obtaining functionally suction impressions, taking into account the features of the relief of the prosthetic bed of edentulous jaws.

We have proposed the use of "indicative" or "primary" individual trays to obtain functional impressions, which ensures reliable fixation of prostheses in patients with complete absence of teeth, which can only be achieved if the macorelief of the prosthetic bed and the inner surface of the prosthesis are in maximum compliance [2]. In each case, it is necessary to carefully evaluate the anatomical and topographical features of the structure of toothless jaws and make appropriate markings of approximate plaster models. Material and methods A clinical study was conducted with the participation of 38 patients aged 52 to 74 years with complete absence of teeth with 2nd and 3rd degree atrophy of the alveolar part of the jaw process according to the Oksman classification, who made up two groups of 19 people. In the 1st group, functional impressions were made according to the generally accepted scheme, and in the 2nd group, according to an improved technique for obtaining impressions of toothless jaws using "indicative" trays. When taking impressions with standard spoons, it is not always possible to achieve a clear display of the boundaries of the prosthetic bed, especially the place where the pliable mucosa transitions into the mobile one [3]. Such an anatomical impression reflects

only the approximate boundaries of the prosthesis and often leads to stretching of the soft tissues in the area of the transitional fold, which complicates the already labor-intensive and time-consuming work of fitting individual trays [5]. The peculiarity of the technique was that in order to obtain plaster models it is necessary to first make "approximate" spoons using the indirect method, i.e. on the model. On the lower jaw, the "approximate" spoon is edged on the lingual side with a roller made of precision A-silicone material (Bisico Function, Detaseal Function), i.e. a sublingual ridge is formed, and with the help of moderate functional tests, fixation of the spoon is achieved. If necessary, the vestibular surface of the tray is also edged and inserted into the oral cavity to create a peripheral valve. In the area of mobile tissues of the alveolar process, perforations are made to release excess impression material. In the upper jaw, in the area of the transition of the hard palate to the soft palate, in most cases the mucous membrane has significant compliance [3], therefore, the functional design of its edges when taking an impression contributes to the creation of a valve and better fixation of the prosthesis. To do this, a strip of material is applied to the distal portion of the tray along line A to functionally design the edges of the tray and it is inserted into the oral cavity.

The formation of the distal valve occurs with the mouth closed, and the peripheral valve is obtained using moderate functional tests, after which they begin to obtain functional suction impressions for the manufacture of plaster models.

Approximate models of toothless jaws are carefully examined before individual working trays are manufactured [9]. On the model of the upper jaw, the following anatomical formations are noted: the incisive papilla, the palatine fossae, the torus, the maxillary cusps, the crest of the alveolar process, indicating the

degree of its atrophy. Next, a midline is drawn, passing correspondingly to the palatal suture and the middle of the incisive papilla [8]. The midline and the line passing along the top of the alveolar ridge should be continued to the base of the model (Fig. 1). On the lower jaw, the contours of the mylohyoid torus and the mucous alveolar tubercle are outlined, the projection of the middle of the ridge of the alveolar part and the line [4] corresponding to the sides of Pound's triangle are noted (Fig. 2). The boundaries of the individual tray are outlined with a pencil on the plaster model and include the inner surface corresponding to the sublingual space, thereby expanding the boundaries of the prosthetic bed. The final impression is obtained with minimal pressure after minor correction of the valve zone using functional Herbst tests [7]. The introduction of the impression mass begins from the peripheral areas of the individual tray, namely from the edge, which is in contact with the area of transition of the actively moving mucosa to the passively moving one [6]. This area is extremely important in terms of providing a circular closing valve, and as a result, the degree of retention of the prosthesis on the jaw. When correcting the edge of an individual tray, it is not always possible to repeat the topography of the boundaries of the neutral zone, and to some extent this problem is solved by an impression compound that compensates for inaccuracies in the boundaries of the individual tray. Results and discussion A study of chewing efficiency in patients of group 1 showed that their chewing efficiency has a positive trend, reaching maximum values (65%) by the end of the 1st month of using dentures. The maximum value of chewing efficiency in persons of group 2 was 77%. Dynamometric comparison of the degree of fixation of prostheses when applying a horizontal load showed their maximum and significant increase by the 30-35th day of using the prostheses. The opening force of the peripheral valve in patients of group 2 was 2520–3710 g in the upper jaw and 2340–2520 g in the lower jaw in any zone of load application. In patients from group 1, the maximum fixation value was 2270-3190 and 2150-2270 g in the upper and lower jaws, respectively. A study of the timing of adaptation to dentures in patients

showed that complete adaptation, which means the absolute restoration of chewing function, in patients from group 2 occurred within 30-35 days, and in group 1 - after 35-40 days of use.

Conclusions

The results of the study allow us to conclude that the use of an "approximate" tray in obtaining a functional impression of edentulous jaws has a positive effect on a number of clinical indicators in people with unfavorable prosthetic conditions, namely: it allows not only to improve the fixation and stabilization of dentures, but also, along with an increase in functional properties to help accelerate adaptive reactions in older people.

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