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FUNCTIONAL MEASUREMENT IN ORTHOPEDIC TREATMENT WITH FULL DENTURE

Abstract: During complete secondary adentia (edentia), efficacy of the functional measurement conducted via individual spoon was investigated in clinical phase II (of trials) of orthopedic treatment with full dentures of patients. 5 Herbs test in the upper jaw and 7 Herbs test in the lower jaw had been applied to fit edges of the individual spoon made in clinical phase II of preparing full dentures with limits of prosthetic bed. Using the Herbs test, measurement had been taken by putting Kerr wax (correctional layer of crystalline-repine and A silicone measuring material) to the edges of the individual spoon fitted. After 1, as well 6 months, the day on which the full dentures were submitted, the patient was asked for performing functional activities that he/she can by wearing the denture into mouth after putting the correctional layer of A silicone measuring material with thickness of 2 mm inside it, until the measurement material would be polymerized. On the inner surface of the upper and lower denture base the correctional layer of the A-silicone-measured material had become very thin, almost 0.1 mm with curtain shape in alveolar ridges, in transition bumper of the upper denture, back 2/3 posterior palatal area and in transition bumper of the lower denture, and retromolar space with thickness of 2-4 mm, in some cases 4 to 6 mm. While we put such pressure on the measure, as if we accept that pressure loaded on denture field with its construction through performing different functions by the patient to whom we prepared the denture will be equal to the pressure put by us when taking measurement placing into (repine, correctional layer of polymerizing measuring material) the individual spoon. However, it is not possible to handle this with a spoon.

Key words: individual spoon, functional cast, prosthetic bed, fixation, stabilization

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Introduction

As a result of complications of general and local factors, particularly caries and periodontal diseases, teeth in the oral cavity are missed and thus complete secondary adentia is formed.

Complete secondary adentia uninterruptedly affects the patient's quality of life. During complete secondary adentia, chewing, digestion process in result of changing of nutrition, absorption of necessary nutrients into organism, which are crucial vital functions till the end of human life are destroyed and that mostly causes to diseases of the gastrointestinal tract. In this case, complete secondary adentia causes to change the social status of the patient

and so, communication disturbances occur throughout articulation and speech disorders, atrophy of the chewing muscles, as well as psychical changes in the background of psycho-emotional changes are appeared.

During complete secondary adentia, adaptation abilities of patients up to orthopedic treatment have decreased, mechanisms of muscle control have weakened and in conclusion, no feeling of satisfaction is easily acquired.

During complete secondary adentia, the major method of orthopedic treatment of patients is considered the preparation of full dentures. During complete secondary adentia, doctor- dentist-

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orthopedic promotes numerous problems that are complicated and difficult to solve in orthopedic stomatological treatment with full dentures. Dental care is becoming more and more complicated, and the main reason for this is the lack of the remaining teeth in oral cavity and also, problem to conduct the orthopedic dental care in accordance with age. Function performed by full dentures in the oral cavity decreases as the age increases, but needs of the patients remain same.

Satisfactory orthopedic treatment is whether there is not any complaint after full dentures have been given to the use of patient. Under normal physiological patterns, full dentures as the apparatus which should replace not only just the missing teeth, but also the tissues being atrophied in the field of prosthetics, require the doctor' or dentist's specific competence [1].

Each doctor- stomatologist (dentist)-orthopedist is obliged to respond to complaints on dentures over time after handing the full denture over to the patient for his/her usage. Among the most prevalent complaints sounded by patients, include: difficulty chewing, traumatic lesions of the mucous membrane, dysarthria, aesthetic complaints on dentures, formation of whistle sound in speaking, ear pain complaint, entering of saliva from the edges to the inside of denture, loss of taste sensation, collection of food under denture, displacement of denture during fluid food intake, nausea and vomiting.

In spite of high demand for full dentures among population, according to the recent statistical materials, full dentures were not prepared for the patients with 25% complete secondary adentia. Based on the information of WHO, 20% -26% of patients do not generally use full dentures, and 37% of them have had to adapt to poor quality dentures having a negative effect on the face and jaw system. During chewing, full dentures are not fixed in 52% of exceptional patients, and 65% of ones come across with different diseases in the mucous membrane of the prosthesis bed, especially pathological processes in the retinal area tissues. According to findings of various studies conducted, 36.9% -40.9% of who had been examined were the patients using the full dentures over 5 years [2].

The efforts of researchers to overcome this problem have resulted in the development of too highly dental material science. Thus, for the preparation of full dentures, all variety of measuring materials has been created, such as: elastic (alginate-based), silicone (double-layer), crystalline (ZnO-eugenol-based repine).

Despite the fact that the problem of fixation of dentures in teeth-free jaws has an ancient history, at present the problem cannot be regarded as fully resolved and still researches are about to continue in this field. Although science and technology are developing at the advanced level, it is impossible to

avoid the use of especially full dentures after the teeth are completely missed. The biggest research predmet of modern dentistry is to protect the patient's eating habits, chewing (functional purpose), aesthetic view (cosmetic purpose), fluent and understandable speaking (phonetic purpose), tissue' resistance and integrity (biological purpose) within the physiological borders with full dentures being used, to overcome psychological problems due to toothlessness (psychological purpose)⁸⁾.

The objective of the study case is to investigate the effectiveness of the functional measure exposing to individual spoon in the clinical phase II of orthopedic treatment with full dentures of patients with complete secondary adentia.

Materials and methods

The material of this study case consisted of investigating the functional measure taken by the individual spoon in the clinical phase II of orthopedic treatment with full dentures of 609 patients over 36 years old with complete secondary adentia who had been examined and treated during 2014-2017. Anatomical measurements were obtained by material of elastic measure (ipeen, hydrocolor), functional measure (crystalline-repine, A silicon-hydrorise second layer). Individual spoon was prepared through: (protacrile, redont cold polymerization; etacrile, ftorax, hot polymerization; plaque photo-light polymerization). Orthopedic examination and treatment with full dentures of patients was implemented via the known traditional method.

Clinical phase I in the preparation of full dentures starts with the examination and completes with taking anatomical measurements. 5 Herbs test in the upper jaw and 7 Herbs test in the lower jaw had been applied to fit edges of the individual spoon made in clinical phase II of preparing full dentures with limits of prosthetic bed. Using the Herbs test, measurement had been taken by putting Kerr wax (correctional layer of crystalline-repine and A silicone measuring material) to the edges of the individual spoon fitted.

After 1, as well 6 months, the day on which the full dentures were submitted, the patient was asked for performing functional activities that he/she can by wearing the denture into mouth after putting the correctional layer of A silicone measuring material with thickness of 2 mm inside it, until the measurement material would be polymerized.

Results

After performing of functional activities till the polymerization process, dentures are removed out of the oral cavity, washed in water, dried by air, and they would have been examined. On the inner surface of the upper and lower denture base the correctional layer of the A-silicone-measured material had become very thin, almost 0.1 mm with curtain shape in

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alveolar ridges, in transition bumper of the upper denture, back 2/3 posterior palatal area and in transition bumper of the lower denture, and retromolar space with thickness of 2-4 mm, in some cases 4 to 6 mm.

Discussion

Keeping the interactions between denture base of full dentures and tissues in the upper and lower jaws dentures contact with, preventing to shift to pathological conditions depend on the effectiveness of the measurements taken from the denture site.

Concord between doctor-dentist-orthopedic, dental technician, patient and material science has a great impact on the course of work. Wrong adjustments of this concord, deviations on clinical and laboratory trials have a direct adverse effect on the results obtained in order to achieve the target.

Orthopedic treatment of complete secondary adentia with full dentures consists of a set of clinical and laboratory stages that are inseparable. If any mistakes are made, for some cases, throughout the phases, these wrong actions give rise to the other mistakes in the next phases. As a result, orthopedic treatment with the prepared full denture becomes unsatisfactory.

A number of scientific research works have been done to improve the measuring of the denture area in the preparation of full dentures [3,4,5,6,7]. Essentially, production of functional measurement is that doctor puts pressure on denture area with the material put into individual spoon when he takes measure by this method. Until the measuring material gets tough, both the physician (doctor) and the patient make certain actions they can, so that relief of transition bumper may be reflected in this dimension. These functional actions will be compatible with the relief created by denture base with denture area and denture edge of transition bumper as though the patient use this denture. Nonetheless, it is never possible to reflect denture area in denture base and all proceedings of transition bumper in measure's edges while taking the measurement through performing different functional actions with the measuring material inserted into the individual spoon. Because while measuring by the individual spoon, it is impossible to reflect all the functional actions performed by the patient in measure's edges taken via the individual spoon when using the denture. Therefore, when using such dentures, the valve zone is broken, fixation of the denture becomes imbalanced by falling of saliva and penetrating of air under the denture.

As noted in literature references and research and study cases, functional measurement is measurement obtained by individual spoon. During our practical activity, after adapting the edges of the individual spoon to limits of prosthesis bed using the Herbs test, it was clear from clinical trials that the edges of the individual spoon are at least 4-6 mm shorter than the border of moving and motionless mucous membranes. Measuring material (repine, correctional layer of the polymerizing material) placed in the individual spoon which had been prepared in functional measuring is fitted to the prosthesis bed with certain pressure by the method of doctor "active", patient "passive", and in this case, it is attempted to keep the measuring material until being crystallized (polymerized).

While we put such pressure on the measure, as if we accept that pressure loaded on denture field with its construction through performing different functions by the patient to whom we prepared the denture will be equal to the pressure put by us when taking measurement placing into (repine, correctional layer of polymerizing measuring material) the individual spoon. In fact, though the measurements are taken in a certain interval range from the same patient by the same doctor, the obtained results were not exactly same.

In order to form valve zone boundaries that will be created on the edges of the dentures by keeping the measuring spoon in this condition while taking the functional measurement, doctor shapes the cheek and lip in the upper and lower jaws, and patient shapes the tongue side of the lower jaw moving his/her tongue in the same manner. As if this reflects interactions between the denture edges and mucous membrane during the functional actions performed with the using of full dentures. Nevertheless, in fact, during the performed functions, it is impossible to form the interactions of full denture with mucous membrane around the denture in the measurement to be obtained by individual spoon.

Conclusion

In summary, we come to such a conclusion that fixation and stabilization of a full denture prepared by executing subsequent clinical and laboratory phases after drawbacks happening in clinical phase II of preparing the full denture will constantly become disrupted. Such this mentioned denture would not be satisfactory and over time it causes to arousing of justified discontents and complaints so that doctor-dentist-orthopedic is obliged to give the answer.

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