МЕТОДИ І МЕТОДИКИ

UDC 616. 314

Isabayev D. K.

TWO-STAGE THERAPY OF DESCENDING OCCLUSION

Almaty state institute of improvement of doctors

(Republic of Kazakhstan, Almaty)

Introduction. Prosthetic care is the main method of orthopedic therapy, and it will become effective only if it is based on the strong knowledge of both etiology and clinical findings of pathological dental abrasion, and the mechanisms, which stimulate the compensation of the malfunction.

As known, pathological dental abrasion changes the anatomic shape of teeth, dental arcade, and alveolar ridge, and creates atypical occlusion curves, and as a result, the occlusal vertical dimension is reduced (descending occlusion). The changes in the activities of the masticatory system are possible, and as a result, the important role is played by nervous and muscle relations of the dento-facial system.

In severe and neglected cases, together with a variety of functional and morphological dysfunctions, so-called 'syndrome of dysfunction of temporo-mandibular joint' occurs, which is characterized by the reduction of [3] the occlusal vertical dimension, dislocation of the lower jaw, and infringement of occlusion-and-articulation relations of dental arcades, and malfunction of temporo-mandibular joint, masseter muscles, and the complications (joint pains, crackling, crunch, headache, facial pains, and neurological pains, paresthesia, glossalgia, glossodynia, secretory derangement) related to its damage.

As known, teeth, parodentium, temporo-mandibular joint and neuro-muscular apparatus are the four elements, which are mutually related. If the functions of one element are changed, then, the functions of the others are changed respectively. Any act of movement has the reflex character. For understanding of the physiology of the masticatory system, it is important to study the stretch reflex of the masticatory fibers or myostatic reflex, which allows to regulate the spatial position of the elements of the dento-facial system [5].

For orthopedic care of the descending occlusion accompanied by the pathological dental abrasion, various removable and fixed dentures were proposed. The advantages and disadvantages of some or other prostheses are disputable. The choice must be made according to the indications and subject to the dental abrasion degree, length of dental crowns, reduction of the occlusal vertical dimension, defects of dental arcades, changes in alveolar ridges, temporo-mandibular joint, and accompanying complications, for example, Costen's syndrome, etc. [1].

However, the guarantee of success and efficiency of therapy of the pathology is the method of treatment: one-time or two-stage one. The literary sources show no shared vision on the issue.

In practice, often, one-time restoration of the occlusal vertical dimension and recreation of the anatomic shape and size of teeth results in recurring complications.

Taking into account the inconsistency of views and presence of many patients with the descending occlusion, who complain of various defects of the dento-facial system, we have decided to identify which of these methods is the most effective for treatment of the descending occlusion.

The supporters of one-time treatment believe that it is possible to use various prostheses, if the occlusal vertical dimension is reduced by less than 4 mm, without preliminary rearrangement of the myostatic reflex. The same sources indicate that some patients had complications such as recurrent pains and other symptoms of affection of temporo-mandibular joints, abrasion of occlusion surfaces, or after putting of survey crowns, etc.

It is widely known that the occlusal vertical dimension is measured by the anatomic-and-physiological method, and that said, it is less than the freeway position dimension by 2 to 3 mm. However, these figures are only empirical. The observations show that this value is individual for every person, and it may range from 1 to 8-9 mm. Therefore, there can be mistakes in determination of the occlusal vertical dimension, which results in complications.

We have performed two-stage treatment of over 500 patients with the descending occlusion and pathological attrition of dental tissues.

At the first stage, the individual occlusal vertical dimension was measured with the use of the dento-gingival occlusal guard, and myostatic reflexes were rearranged for stretching, as follows. After the occlusal vertical dimension is measured, the working and

auxiliary pickup impressions are made. The gypsum mockups with the wax occlusal rims are plastered in the articulator. Then, modeling is performed, and the wax occlusal rims are replaced by plastic, and the occlusal guard is finally processed. During the second visit of patient, the temporary occlusal guard is tried-in, taken away and re-adjusted.

That said, the guard was used (plastic was either added or cut) to adjust the occlusal vertical dimension individually for every patient, while keeping the articulation balance, which contributes to even distribution of masticatory forces and preventing the overload of the parodentium of the teeth under the guard, and the opposite teeth, and eliminating any causes of dysfunction of the temporo-mandibular joint, and increasing the functional value of the occlusal guard. The resulting height determined by the dento-gingival occlusal guard is the constructive occlusal vertical dimension.

We have analyzed the findings of many years of our clinical studies, which allowed us to develop the tactics of preliminary orthopedic functional rearrangement of the myostatic reflex in case of the descending occlusion.

The studies have shown that the patients do not complain in a day of application of the occlusal guard. However, in three days, most of the patients noted slight discomfort such as pain, fatigue and tension of the masticatory and temporal muscles, and the temporo-mandibular joint. That said, when necessary, the guard was readjusted.

During 7 to 10 days, the said symptoms were more evident in the group of the patients, who had the history of dysfunction of the temporo-mandibular joints, and recurrent reduction of the occlusal vertical dimension after prosthesis was mounted without preliminary orthopedic functional preparation, and various symptoms of Costen's syndrome. For these patients, the occlusal vertical dimension was reduced by 1 to 2 mm. At the next visit on the 14th day, these patients noted the relief of pains and tension in the masticatory muscles, temporo-mandibular joints, and their masticatory function improved. In the other patients, the pains, muscle and joint tension and fatigue, as well as burning and tingling tongue disappeared. In three weeks, almost all evident symptoms disappeared (those of Costen's syndrome), and so did the signs of dysfunction of the masticatory muscles and temporo-mandibular joints. The patients noted that their ear congestion and noise disappeared, and angular chilitis were epithelialized. Then, control visual examinations were performed every 7 days during 6 weeks, and the clinical signs in muscles, temporo-mandibular joints, and parodentium, and mucous surfaces were recorded.

The rearrangement of myostatic reflexes is caused by the physiology of the muscle fibers. The important stimulating mechanism for movement of the lower jaw is the proprioceptive impulse arising in the parodentium. The proprioceptive impulses are caused by the subcortical reflexes, which set the spatial position of the lower jaw. The purpose of the occlusal guard used for rearrangement of myostatic reflexes is to interrupt the proprioceptive connection, establish the new position of the lower jaw, and fix it in the subcortex [5].

When the occlusal guard is used for rearrangement of myostatic reflexes, we, for the first time in the practice, have identified the clinical signs of the process, which are called clinical symptoms of functional rearrangement of myostatic reflexes [2].

It appears in 2 to 3 weeks after permanent application of the occlusal guard, and is shown as follows: the patient is asked to remove the guard, and then, to close his/her jaws in the centric relation, and simultaneously, the index fingers of the researcher are put to the angles of the lower jaw, where the masticatory muscles are attached. In 7 to 10 seconds, under the index fingers of the researcher, small fibrillation of the muscles is felt, which is caused by the fatigue of the muscles. At the moment, the patient wants to open the jaws. In order to keep the jaws in the centric relation, he/she has to expend some more efforts. The duration of the process coincides with the data obtained by myographic, myotonographic, or electromasticocytographic studies performed by I. S. Rubinov.

This symptom evidences that the functional rearrangement of myostatic reflexes is started when the increase of the static tonus is increased and the decrease of the dynamic tone of the muscles, when the occlusal guard is removed, come back to the original level.

The second clinical symptom appears in 5 to 6 weeks of permanent use of the occlusal guard. It is shown in various patients more or less differently, and depends on the degree of reduction of the occlusal vertical dimension. The patients with the first degree of reduction of the occlusal vertical dimension have less effect than the patients with the second or third degrees. The symptom is identified as follows. After the occlusal guard is removed from the oral cavity, we ask the patient to close his/her jaws in the centric relation. Initially, he/she, by reflex, from the position of physiological rest, raises the lower jaw to the height of disconnection determined by the height of the occlusal guard, and then, for the full contact of the occlusion surfaces of the erased teeth, the lower jaw makes a stepped movement. This clinical symptom is called 'step symptom'. The time of appearance of the symptom coincides with the data obtained by I. S. Rubenov, who notes that as a result of application of the apparatuses, which disconnect the occlusion for 4 to 5 weeks, the static and dynamic reflexes of disconnection of occlusion are rearranged, and new physiological level is established. The stretched muscles restore the initial static and dynamic tonus, and the new state of physiological rest is established when the lower jaws are down.

That said, it is necessary to check the state of various links of the joint, and muscle and vascular systems (by tomography of temporo-mandibular joints, electromyography, rheography) to rearrange the myostatic reflexes in case of the descending occlusion [2].

The therapy of the descending occlusion by functional orthopedic rearrangement of myostatic reflex of the muscles in the patients with dysfunctions of the elements of the dento-facial system shows that it is possible to create the best functional conditions in the

masticatory system. It is also important that the occlusal vertical dimension is determined at the time of operation of the dento-facial system, and therefore, the method is functional. Thus, the analysis of the results of the therapy of pathological dental abrasion with the reduced occlusal vertical dimension of all degrees by preliminary orthopedic functional rearrangement of myostatic reflex allows to recommend this method as a reliable therapy and prophylaxis method for orthopedic preparation of the elements of the dento-facial system before reasonable prosthetics care.

The sequence of the therapeutic procedures depends on the peculiarities of the pathological process in every individual case. The prophylactic procedure for restoration/choice of the descending occlusion is the two-stage therapy, where the leading role is played by the rearrangement of myostatic reflexes.

Special attention has been paid to adaptation of the patient to the occlusal guard, because there are individual reactions of organism, in particular, oral cavity organs, to a foreign body such as the occlusal guard. Therefore, it is important to know how adaption goes in every specific case, because it determines the choice of recommendations for the patient. It is also required to mobilize the will of the patient, concentrate his/her attention for overcoming any discomfort in the oral cavity, which occurs during adaptation to the occlusal guard.

An important element to ensure the efficiency of the therapy of this pathology is psycho-prophylactic activities of the physician. In our opinion, psychotherapeutic influence must be case-by-case. It must be based on the logic thinking laws unlike standard psychic preparation. First of all, we must identify the type of nervous-and-psychic activities and temperament of the patient, establish contact with him/her, and create a lot of positive factors [4] (the appearance of physician, his/her erudition, speech 'hygiene', etc.). It is necessary to tell him/her about the stages of prosthetic care and discuss the design of the future dental prostheses. It is necessary to allow the patient to speak out, and feel the participant of the therapy, and influence on him/her by explanatory and rational psychotherapy.

At the second stage, we have conducted the reasonable prosthetic care and applied various removable and fixed dentomaxillofacial prostheses according to the indications.

Many years of clinical experience show that the following preconditions are required for efficient therapy of the descending occlusion accompanied with pathological dental abrasion:

– to know the etiology and clinical findings of the descending occlusion, and biological mechanisms of the pathology;

– to conduct two-stage therapy irrespectively of the degree of reduction of the occlusal vertical dimension;

– to pay much attention to the adaptation to orthopedic prostheses as the guarantee of successful therapy;

– to perform psycho-prophylactic activities with the patients before, during and after therapy, and to know the relevant methods and techniques.

Literature

1. Bushan M. G. Descending occlusion / M. G. Bushan. – Kishinev : «Karta Moldovenyaske», 1967. – 148 p.
2. Isabayev D. K. Orthopedic therapy of pathological dental abrasion accompanied by descending occlusion. Author's abstract of thesis for the degree of candidate of medical science / D. K. Isabayev. – Almaty, 1999. – 256 p.
3. Kalamkarov Kh. A. Orthopedic therapy of pathological abrasion of dental tissue / Kh. A. Kalamkarov. – M. Medicine, 2004 – 174 p.
4. Kulbekov K. K. Prophylaxis of stress in orthopedic dentistry clinic / K. K. Kulbekov. – Almaty, 1995. – 169 c.
5. Rubinov I. S. Physiological principles of dentistry / I. S. Rubinov. – Medicine, 1965. – 350 p.

УДК 616. 314

ДВОХЕТАПНЕ ЛІКУВАННЯ ПРИКУСУ, ЩО ЗНИЖУЄТЬСЯ

Ісабаєв Д. К.

Резюме. Проведено двохетапне лікування більше 500 хворих зі зниженням висоти прикусу при патологічній стираємості твердих тканин зубів. Вироблена тактика по попередній ортопедичній функціональній перебудові міостатичного рефлексу при прикусі, що знижується, за допомогою назубодесневої капи. Особливу увагу приділено застосуванню психопрофілактичної дії при адаптації пацієнтів.

Ключові слова: нейро-мускулярний апарат, міостатичний рефлекс, пропріорецептивні імпульси, знижуючийся прикус, назубодеснева капа.

УДК 616. 314

ДВУХЭТАПНОЕ ЛЕЧЕНИЕ СНИЖАЮЩЕГОСЯ ПРИКУСА

Исабаев Д. К.

Резюме. Проведено двухэтапное лечение более 500 больных со снижением высоты прикуса при патологической стираемости твердых тканей зубов. Выработана тактика по предварительной ортопедической функциональной перестройке миостатического рефлекса при снижающемся прикусе при помощи назубодесневой каппой. Особое внимание обратить на применение психопрофилактического воздействия при адаптации пациентов.

Ключевые слова: нейро-мускулярный аппарат, миостатический рефлекс, проприоцептивные импульсы, снижающий прикус, назубодесневая каппа.

UDC 616. 314

Two-Stage Therapy of Descending Occlusion

Isabayev D. K.

Abstract. We have performed two-stage treatment of over 500 patients with the descending occlusion and pathological attrition of dental tissues.

At the first stage, the individual occlusal vertical dimension was measured with the use of the dento-gingival occlusal guard, and myostatic reflexes were rearranged for stretching, as follows. After the occlusal vertical dimension is measured, the working and auxiliary pickup impressions are made. The gypsum mockups with the wax occlusal rims are plastered in the articulator. Then, modeling is performed, and the wax occlusal rims are replaced by plastic, and the occlusal guard is finally processed. During the second visit of patient, the temporary occlusal guard is tried-in, taken away and re-adjusted.

We have analyzed the findings of many years of our clinical studies, which allowed us to develop the tactics of preliminary orthopedic functional rearrangement of the myostatic reflex in case of the descending occlusion.

The studies have shown that the patients do not complain in a day of application of the occlusal guard. However, in three days, most of the patients noted slight discomfort such as pain, fatigue and tension of the masticatory and temporal muscles, and the temporo-mandibular joint. That said, when necessary, the guard was readjusted.

During 7 to 10 days, the said symptoms were more evident in the group of the patients, who had the history of dysfunction of the temporo-mandibular joints, and recurrent reduction of the occlusal vertical dimension after prosthesis was mounted without preliminary orthopedic functional preparation, and various symptoms of Costen's syndrome. For these patients, the occlusal vertical dimension was reduced by 1 to 2 mm. At the next visit on the 14th day, these patients noted the relief of pains and tension in the masticatory muscles, temporo-mandibular joints, and their masticatory function improved. In the other patients, the pains, muscle and joint tension and fatigue, as well as burning and tingling tongue disappeared. In three weeks, almost all evident symptoms disappeared (those of Costen's syndrome), and so did the signs of dysfunction of the masticatory muscles and temporo-mandibular joints. The patients noted that their ear congestion and noise disappeared, and angular chilitis were epithelialized. Then, control visual examinations were performed every 7 days during 6 weeks, and the clinical signs in muscles, temporo-mandibular joints, and parodentium, and mucous surfaces were recorded.

The rearrangement of myostatic reflexes is caused by the physiology of the muscle fibers. The important stimulating mechanism for movement of the lower jaw is the proprioceptive impulse arising in the parodentium. The proprioceptive impulses are caused by the subcortical reflexes, which set the spatial position of the lower jaw. The purpose of the occlusal guard used for rearrangement of myostatic reflexes is to interrupt the proprioceptive connection, establish the new position of the lower jaw, and fix it in the subcortex.

It appears in 2 to 3 weeks after permanent application of the occlusal guard, and is shown as follows: the patient is asked to remove the guard, and then, to close his/her jaws in the centric relation, and simultaneously, the index fingers of the researcher are put to the angles of the lower jaw, where the masticatory muscles are attached. In 7 to 10 seconds, under the index fingers of the researcher, small fibrillation of the muscles is felt, which is caused by the fatigue of the muscles. At the moment, the patient wants to open the jaws. In order to keep the jaws in the centric relation, he/she has to expend some more efforts. The duration of the process coincides with the data obtained by myographic, myotonographic, or electromasticocytographic studies performed by I. S. Rubinov.

The second clinical symptom appears in 5 to 6 weeks of permanent use of the occlusal guard. It is shown in various patients more or less differently, and depends on the degree of reduction of the occlusal vertical dimension. The patients with the first degree of reduction of the occlusal vertical dimension have less effect than the patients with the second or third degrees. The therapy of the descending occlusion by functional orthopedic rearrangement of myostatic reflex of the muscles in the patients with dysfunctions of the elements of the dento-facial system shows that it is possible to create the best functional conditions in the masticatory system. It is also important that the occlusal vertical dimension is determined at the time of operation of the dento-facial system, and therefore, the method is functional. Thus, the analysis of the results of the therapy of pathological dental abrasion with the reduced occlusal vertical dimension of all degrees by preliminary orthopedic functional rearrangement of myostatic reflex allows to recommend this method as a reliable therapy and prophylaxis method for orthopedic preparation of the elements of the dento-facial system before reasonable prosthetics care.

The sequence of the therapeutic procedures depends on the peculiarities of the pathological process in every individual case. The prophylactic procedure for restoration/choice of the descending occlusion is the two-stage therapy, where the leading role is played by the rearrangement of myostatic reflexes.

Many years of clinical experience show that the following preconditions are required for efficient therapy of the descending occlusion accompanied with pathological dental abrasion:

– to know the etiology and clinical findings of the descending occlusion, and biological mechanisms of the pathology;
– to conduct two-stage therapy irrespectively of the degree of reduction of the occlusal vertical dimension;
– to pay much attention to the adaptation to orthopedic prostheses as the guarantee of successful therapy;
– to perform psycho-prophylactic activities with the patients before, during and after therapy, and to know the relevant methods and techniques.

Keywords: neuro-muscular apparatus, myostatic reflex, proprioceptive impulses, descending occlusion, occlusion splint.

Рецензент – проф. Новіков В. М.

Стаття надійшла 22. 12. 2014 р.