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**Fixation and stabilization of
complete removable dentures.
Construction of complete
removable dentures. Methods
of fitting of artificial teeth.**

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Plan

- ▶ Fixing of complete removable dentures. Correction.
- ▶ Adaptation. Factors, influencing on adaptation.
- ▶ Mechanism of adaptation to dentures.
- ▶ Reaction of tissues of prosthetic bed on CRD.

The ultimate goal of prosthetics at a complete loss of teeth is renewal of the masticatory system both in functional and aesthetic relation by valuable dentures.

1. Fixation of complete removable dentures. Correction.

Procedure of fixing of complete removable dentures is begun with their close-up. Comes to light visible on an eye and determined digital-view ledges, roughnesses on the internal surface of base and his edges which grinding is needed. Quality of polish of denture, its thickness is estimated. After the removal of the transferred mistakes dentures wash with water and enter in the cavity of mouth.

It should be noted that the stage of imposition and correction of dentures must be done with the same responsibility, as well as other stages of making of dentures, because cases are not uncommon, when valuable, high-quality made dentures have to be redone from the carelessly executed correction. Sometimes patients stop to use dentures, because a doctor does not execute carefully a correction and does not remove pain symptoms. Usually dentures are easily laid on a jaw (an exception is made by cases, when a hillock on a upper jaws is pear-shaped), and on lower jaws – there are undercut in a retroalveolar area. In such cases on a upper jaws from one side cut away the wing of denture to the most salient part of hillock. And on a lower jaw denture is laid on, moving forward at first backwards, after dropping downward and forward. After introduction of denture to the oral cavity check: whether a base does not fall behind from tissues of prosthetic bed, and whether there is not balancing. Only after it is offered to the patient to close teeth in position of central relations. Verification of closeness of closing of teeth, having an important value for the even distributing of masticatory pressure, and also for providing of stability of denture, make at first in position of central relations, and then – at motions of lower jaw. This procedure consists in the removal of premature contacts of teeth and creation of the smooth, unimpeded sliding at masticatory motions.

In an order at electoral grinding of teeth not to change the height of lower third of person the separate skates of hillocks abandon not touched: grinding cheek skates of hillocks of overhead teeth, and language – lower teeth, and palatal skates of hillocks of overhead teeth and cheek lower teeth (supporting a interalveolar height) - abandon not touched. Thus use a copypaper.

Areas of enhanceable pressure under the base of dentures and beyond measure long edges are also subject a correction. Similarly at imposition of dentures it is possible to find out flagrant mistakes, touching the scopes of denture, exactness of determination of central relation and evenness of closing of teeth. More complete judgement about efficiency of denture from point of all of the requirements produced to him it is possible to get later, looking after to the patients in the period of his adaptation to denture. Degree of stabilizing of dentures on toothless jaws it is also expedient to estimate only in a few days after the use by them. Fixing of dentures it is possible to check on a supramaxilla, pressing on fingers by turns on front and lateral teeth. Force of valve in area of soft palate is determined, pressing on the cuttings edges of overhead frontal teeth of denture in vestibular direction. On a lower jaw the same reception is set the degree of fixing of base in distal departments by turns from a right and left side. About that, how the front areas of base are fixed, it is possible to judge, drawing off overhead denture downward, and denture for a lower jaw – upwards.

Stability of dentures in a dynamics is checked up at implementation of the set motions a patient. Denture also must not be displaced at the autokinesias of lower jaw. The estimation of scopes of dentures and their correction can be made under control the special tests.

TESTS ON FIXING OF DENTURES

- ▶ If denture of lower jaw rises slowly and evenly, it is necessary to decrease length of his vestibular edge according to the areas of adjoining of masseters.
- ▶ If denture rises only in the back-end, it is needed to decrease length of language edge of denture under a mandibular-sublingual line, however much denture must recover this line however.
- ▶ If denture is displaced forward, it means that he beyond measure is extended in behind molar and adjoining to it by a language areas.
- ▶ Displacement of denture back depends on a few reasons:
 - ▶ a) the lip edge of denture is extended beyond measure;
 - ▶ b) frontal teeth are put not in accordance with a neutral muscular zone;
 - ▶ c) design of base from a vestibular side beyond measure volume.

Tests on fixing of upper jaw denture are analogically. Verification of dentures stability of upper and lower jaws and finding out the shortened scopes is conducted simultaneously with the exposure of areas of enhanceable pressure under functional tests control. Fixing of dentures on toothless jaws is improved to the seventh day of the use by them, arrives at the highest point in a month and saved for a year, and then begins to weaken. The same results are given by masticatory efficiency: first day renewal on 25,8%, through half-year – 84,4%, in a year – 89,4% (after Shilova G.B.).

The correction of denture it is necessarily to appoint on the next day. Give instructions. Dental cuts turn a stomach at first, salivation, the vagueness of speech is marked, the taste and haptic feelings go down also. Indicated phenomena, and also feeling of foreign body in to the mouth especially strongly expressed at patients, using dentures first. A confidence in socializing with dentures and adaptation arise up not immediately to them, and only after some time. In the flow of this time quite often it is required to make the correction of dentures, because they can injure a mucous membrane and cause pain. At that rate a patient must immediately appeal to the doctor for the removal of reasons of inconvenience or trauma. Important, that a patient in the flow of the first week carried dentures constantly – in the day and night, taking off them only for hygienical treatment (after every eating); during a meal, chewing food is necessary slowly, cutting it on shallow pieces; not to use hard food (nuts, rusks); to guard dentures from falling; for the night to take off dentures, carefully to clean a hard brush and to keep in the closed vessel of «Denta». For unloading of mucous membrane of prosthetic bed, not adjusted to perception of masticatory pressure, daily allowance pauses are needed in 7 days, 10 days, each half-year. After imposition of denture of patient assign for a reception to the doctor in the nearest 1 – 2 days, after one time in a week, and further to on testimonies. A doctor continues looking after to the patients until will not make sure in that complete adaptation came to dentures.

2. Adaptation.

Factors, influencing on adaptation.

Orthopaedic treatment is serious interference with the organism of man, and to one of main problems him there is adaptation of patient to denture. Termine «adaptation» (from Latin «adaptatio» is adjusting, adaptation) in orthopaedic stomatology can be applied in two cases:

- in the concept of adaptation of patient to denture;
- in the concept of adaptation, adjustings of denture to tissues of the prosthetic field, both at peace and to masticatory motion, to arising up at chewing of food.

As well, in accordance with all of rules of dentoprosthetic art denture was not executed, a main factor, determining success of mastering of denture, adaptation to him, is biological. Under a biological factor understand the sum of all of reactions of organism, organs and tissues of mouth cavity, mucous membrane, bone fabric, muscles and joints depends on the state of health of man, his age, and also type of higher nervous activity and psychological status.

At making of complete removable dentures important:

- correct psychological preparation of patient and awareness by him, from his patience and desire adaptation to denture;
- subjective estimation of dentures to the patients;
- degree of fixing and stabilizing of dentures;
- observance of aesthetic norms at constructing of dentures;
- cleanness of speech;
- possibility of the use of various food;
- experience of using denture.

3. Mechanism of adaptation to dentures

A denture is perceived tissues of prosthetic bed as a foreign body and is a strong irritant for nervous completions of mucous membrane of mouth cavity. The irritation of sensible receptors of mouth cavity is passed on a reflex arc to the centers of salivation, speech, as a result the increased sialosis, urges, appear on vomiting, the functions of speech, mastication and swallowing are violated.

Adaptation to denture comes gradually and expressed in development of neuromuskular co-ordination, renewal of the broken functions of speech, mastication and swallowing. Perception of denture as a foreign body disappears as far as adaptation and complete adaptation to him of patient. Adaptation to dentures it is possible to examine as a display of the crust braking, coming in different terms – from 10 to 30 days – depending on many reasons.

V.Y.Kurlyandskiy distinguishes three phases of adaptation to the dentures.

The first phase is a phase of irritation – observed from the moment of beginning of making of denture and in the day of imposition of denture. Characterized an enhanceable sialosis, change diction, weak masticatory power, vomitive reflex.

The second phase is a phase of the partial braking – proceeds from 1 to 5 day after imposition of dentures. Speech, masticatory power, is restored in this period, a sialosis diminishes and vomitive reflex goes out.

The third phase is a phase of the complete braking – lasts from 5 to 33 days. In this phase persons are not felt by denture as foreign body, and vice versa, discomfort feels without it.

If after this period of patient can not adapt oneself to dentures, to on – to visible, some error and denture is sufferet it is necessary to do.

After Rubinov I.S., adaptation is the process of making of pavlovian motive reflexes which are gradually perfected and fastened is underlaid. Denture becomes the organ of mouth cavity.

Shilova G.B. selects two stages in the process of adaptation.

The first stage is adaptation to denture as foreign body as a result of the protective braking.

The second stage is adaptation to denture on the basis of conditioned-unconditioned reflexes and forming of new motive stereotype of mastication act.

Patients which dentures make repeatedly adapt oneself to it considerably quick – after 5- 7 days. On speed of adaptation the degree of fixing and stabilizing of dentures, absence of the pain feelings, influences also. In an adaptation period a doctor not only conducts a necessary correction but also estimates quality of orthopaedic treatment on the whole.

The results of orthopaedic treatment can be considered positive, if after prosthetics speech was well restored, fixing and stabilizing of dentures is good, aesthetic norms are observed, possibility to accept hard food appeared, a patient estimates dentures positively.

The term of using plate dentures (on the average) is determined in 3-4 years. In 3 years masticatory efficiency remains high, but arrived at the considerable increase of time of chewing of food as compared to by information, got by the end of first-year.

4. Reaction of prosthetic bed tissues on CRD

Influence of dentures on tissues and organs of the masticatory system is various. The same various are return reactions of organism. Above all things it is necessary to mean that denture can render direct influence on tissues and organs of mouth cavity. Such influence is observed at the contact of denture with tissues which unite a term «prosthetic bed». For removable denture a bed is a mucous membrane of hard palate, alveolar sprout.

Except for direct, denture renders the mediated operating on organs and tissues, located in the distance and not coming with him in contiguity. This influence is carried out mediated through different organs and systems. The result of similar influence is a change the function of muscles, temporomandibular joint at understating or increase of interalveolar height. Consequently, influence of denture not limited by a prosthetic bed, but goes far beyond his scopes. Thus, we walked up to the necessity to expose maintenance of other term – «prosthetic field». Under the prosthetic field understand all of tissues and organs which are in the field of both mediated and direct influence of denture. A prosthetic bed in this understanding is part of the prosthetic field.

The return reactions of prosthetic bed are determined, from one side, by character, intensity and duration of action of irritant, and from other side – by reactivity of organism. Presently it is already impossible to talk about influence of denture on fabric of prosthetic bed without pointing connection between a concrete irritant and return reaction. Study etiologies and pathogenic of reactions of tissues of prosthetic bed will allow to expose changes reasons of which are celled in clinical, technical execution of different procedures at prosthetics, in character of material which denture is made from, or in particular case to the construction.

To the present tense basic structural material for the bases of removable plate dentures are plastics of acryl row. From data of L.D.Chulak (1997) from all of 98% removable constructions are made. In a prospect material yet long years will be utilized in orthopaedic stomatology (Ya.V.Zablotskiy, 1990).

It is necessary to do justice, acryl plastics differ high technologicalness, sufficient sanitaryness and aesthetic properties (Ornat, 2002).

By a side by side with this, inherent modern base materials and row of the substantial failings among which on the first plan insufficient mechanical durability and side influence of ingredients of acryl plastics come forward on tissues of cavity of mouth and organism on the whole (N. P. Sysoev, 1991, Palkov, 2000).

Concordantly to information of literature, already in the first year after using denture from 10% to 50% plate dentures appear functionally not suitable from breakages or changes in tissues of prosthetic bed (A.B.Belikov, 1993).

From acryl plastics it is necessary the second more substantial lack of removable plate dentures to acknowledge its influence on tissue of prosthetic bed. A reaction on denture depends on a number of factors, causing one or another complications.

Removable plate dentures, adjoining with the large area of prosthetic bed, render, thus, mechanical, chemics- toxic and allergic influence, that is expressed development of different diseases of mucous membrane of cavity of mouth.

Complications, arising up at using removable plate dentures from acrylics, are classified in the special literature as a «syndrome of unbearableness of acryl plastics». This term is collective and does not reflect neither etiologic nor nosotropic character of disease.

The same collective value inherently to the term «prosthetic stomatitis», meaning the disease of mucous membrane of cavity of mouth, caused dentures.

Except for these names in literature terms are utilized «allergic stomatitis», «contact allergy», «acryl allergy» (A.K.Nikolishin, E.V. Nikolishina, 2002).

From existing presently most widely-used are classifications described in works of Vasilenko Z.S. and Jordanishvili A.K.

On the basis of clinical signs, patomorfological picture and these clinics-laboratoris researches among the diseases of mucous membrane of cavity of mouth, Vasilenko Z.S. selects three groups:

Inflammatory (stomatitis).

Not inflammatory (dysfunction of receptor vehicle)

Combined forms.

Inflammatory diseases can carry sharp and chronic character and divided by 2 sub-groups:

- hearth (to traumatic etiology)
- diffuse (to toxic-allergical etiology).

Dysfunctions of receptor vehicle, related to using removable dentures, it is possible to divide on:

- primary (primary defeat of receptors of mucous membrane)
- second (pathologies related to the presence in CNS or in internalss).

Polypathias are hardness added diagnostics and characterized as by the presence of inflammatory so productive changes of mucous membrane of prosthetic bed and dysfunction of receptor vehicle.

In classification Iordanishvili A.K. is selected the followings forms of pathological changes of mucous membrane the cavity of mouth:

- on etiology (traumatic, toxic, allergic and conditioned physical factors);
- on patomorfolological character of process (catarrhal, erosive, ulcerous, necrotizing, neoplasomatics);
- in grain flows (sharp, chronic, intensifyed chronic);
- on localization of pathological changes (hearth, diffuse, combinated)

The clinic of prosthetic stomatitis is various. Nevertheless there is a row of general signs, characterizing a disease. Erythemas, burning in area of mucous membrane of language, behave to them, cheeks, lips, pain (local superficial or dull deep with an irradiation), violation of the taste feelings.

From specific complaints at traumatic prosthetic stomatitis more frequent than other specify on pain in the place of trauma, increasing at using denture. Usually this form is caused the extended edges of denture, violation of articulatory mutual relations, balancing of base, roughness of internal surface of denture. A mucous membrane becomes bloodshot, oedematous. At diffuse traumatic stomatitis hyperemia and oedematousness of mucous membrane is determined on all of area of prosthetic bed, shallow erosions and ulcers.

Side influence of removable denture is expressed in the transmission of masticatory pressure on tissue of prosthetic bed, that is an inadequate irritant for a mucous membrane, in violation of self-wiping, thermoregulation, speech, feeling of taste. To negative influence of removable denture it is necessary to take «hotbed effect» and vacuum. «Hotbed effect» arises up at using dentures with a plastic base which has small heat conductivity. Hereupon under denture a temperature, equal to the temperature of body of man, is saved. It is instrumental in reproduction of microorganisms and worsens the hygienical state of prosthetic bed.

Vacuum arises up under denture with a good locking valve. By virtue of it there is effect of medical jar, which is accompanied hyperemia of mucous membrane of prosthetic bed and its chronic inflammation with possible pappilomatosis. In pathogeny of this symptom the not last role is played by the state of capillaries, namely their permeability which changes at many general diseases of organism.

Mechanical influence of denture is complicated that he leans against tissues which physiology are not adjusted to perception of masticatory pressure, and that is why the defects of internal surface hamper or do impossible using removable constructions for 50% patients (Nidzel'skiy M.Y., 1997, Chulak I.D., 1997). As Y.V.Zablotskiy marks, all of unsatisfactory quality dentures cause different family pathological changes of mucous membrane of prosthetic bed and need alteration, and concordantly data of Z.S.Vasilenko (1980) unsatisfactory quality of internal surface is observed, approximately at 25 % removable dentures.

Toxic prosthetic stomatitis arise up because of washing of free monomer from the bases of dentures, depend on the area of prosthetic bed, duration of influence, concentration and suction ability of mucous membrane. Complaints are here taken to the unpleasant feelings and burning of mucous membrane, to enhanceable salivation. At examination diffuse hyperemia and edema of mucous membrane comes to light exactly consilient with the scopes of denture.

Allergic prosthetic stomatitis are a reaction of slow type. Principal reason of their origin consists in development of hypersensitiveness to the organic and inorganic ingredients of materials for the receipt of dentures. Clinically characterized complaints about burning of mucous membrane of cavity of mouth, dryness in to the mouth, violation of the taste feelings, by head pains, crabbiness, skin pouring out. Usually shows up on 5–10 days after imposition of dentures. At examination of cavity of mouth an edema and diffuse hyperemia of mucous membrane of prosthetic bed is revealed, and also cheeks, language and lips.

Vomitive reflex is stimulated and controlled nervous completions, located in the mucous membrane of soft palate, gullets of root of language. A sensitiveness of soft palate to the foreign objects is the normal protective reaction of organism. However for some patients he beyond measure is expressed and arises up even at insignificant stomatological manipulations in the cavity of mouth. It is known that expressed vomitive reflex can be the symptom of row of organic diseases and functional violations of cns.

Many patients with removable dentures have a defeat of mucous membranes by candidas. Candida – is the resistant flora of mouth cavity, comes to light for 11 – 100% healthy people.

In the cavity of mouth candidas exists in two forms:

1 - as zymic cages (spores), its diameter is 1–4 mkm;

2 - as pseudomycelium or mycelium of candidas, has the appearance of filaments the thickness of 1,5 – 4,0 mkm.

Candidas rendered by destructive influence on a plastic, exude organic acids: lemon, oxalate sorrel, vinegar, glucon, milk.

Its physical and chemical properties change at the senescence of plastic, terms are created for the best development of candidas. The products of metabolism of candidas (organic acids, SO₂, pigments) come to light at examination is pigmentation of removable fold dentures, and also at a labtest in material, taken from denture. Favourite localization of candidas is corners of mouth, tongue, hard palate. Thus, cracks, covered crusts appear in the corners of mouth; tongue of fold assessed. It is considered that candida stomatitis is characterized a triad: inflammation of palatal, tongue, corners of mouth, here diagnosed without laboratory research.

At patients with candidoses, which use removable plate dentures from acryl plastics, mucous membrane under denture is hyperemated, oedematous, often there is papillomatosis, dryness, that a clinical picture reminds allergic inflammation or mechanical trauma removable denture. A basic complaint is burning of mucous membranes under the base of denture, more frequent on a upper jaw. Burning is permanent, increasing at the reception of sour food. At questioning and inspection the protracted term of using dentures, and also unsatisfactory hygienical care, comes to light of them. Often concomitant diseases appear for patients : diabetes, glossalgia.

Treatment of patients prosthetic stomatitis on volume and complications not identical at different clinical forms. Except for purposeful specific therapy a substantial role is played by nosotropic treatment.

Measures on the removal of influence of remaining monomer are more various. A lot of methods is approved. As early as 1968 Kurlyandskiy V.Y. with coauthors suggested to cover the palatal surface of plastic denture thin tape of silver. The therapeutic effect of this manipulation is explained screening of plastic, exception of direct contact of mucous membrane with a remaining monomer.

The mode and method of polymerization is a reliable mean of decline of amount of remaining monomer, washed saliva. The castable pressing provides the best plenitude of polymerization and allows part of free monomer to transfer to the gypseous form.

Method of treatment of dentures in the environment of solvents at temperatures, lying in area of passing of polymers to the high-elasticity state, allows also to decrease the amount of remaining monomer.

There is a method of plasmyc covering of different materials, including nitrid of titan. The use of fluoroplastic coverages of dentures allows to obtain the reliable protecting of mucous membrane of cavity of mouth from hard mechanical and toxic-allergical influences of acryl plastics. Making of dentures from a colourless plastic removes the action of dyes.

The use deserves attention in the process of polymerization of SV-energy, that improves properties of plastic, diminishes the expenses of time on making of dentures, provides rapid adaptation (B.P.Markov, 1998).

Does not require considerable expenses and changes in technology coverage of dentures monolithic plastic tape from polycarbonatis, treatment of acryl bases in N-butyl ether of ac.a., overcoating as varnishes, containing basis and complex of medical preparations of antiallergic, contrinflammatory, antimicrobial action (Zukov, 1997).

Unfortunately, all of these methods are not given by possibilities fully to remove the output of remaining monomer and bacterial muddiness of dentures (Gozhaya,1988, Danilov, 1993).

Along with the resulted information on the improvement of technology of making of removable plate dentures from acrylics in literature there are referats_and on the searches of new materials for maked dental applianses. If acrylics are allergens, the best prophylaxis of allergic displays is absence of such dentures in the cavity of mouth. raising of tolerance of removable dentures of possible in due to the use the plastics of type «Acronyl», «Bakril», «Dakril», which the less toxic ingredients of co-polymer enter in the complement of.

There is another direction of searches of decline of harmful influence of removable plate dentures, which is based on making of allcast metallic bases, which do not eliminate acryl additions as material for fixing of acryl false teeth, or two-layer bases with an elastic gasket on all of area of prosthetic bed.

It is not necessary to forget also about the method of pre-treatment of mucous membrane of cavity of mouth. It is vacuum influence before prosthetics and in the process of adaptation to dentures (Ivannikov, 1992), treatment of prosthetic bed, and also irradiation of mucous membrane laser vehicles, the current of low tension (electrostimulation) (Prokhonchukov, 1998).

Also a patient must be taught to observe the hygiene of mouth cavity with the purpose of warning of violations origin of exchange processes and prosthetic candidosis.

At treatment of the second disfunctions of receptor vehicle basic treatment is conducted for a doctor – neurologist. At the expressed vomitive reflex for the removal of irritating action of denture a decision role is played by not length of denture, but closeness of his adjoining and evenness of immersion of denture in fabric of prosthetic bed. It is thus necessary maximally to utilize pliability of mucous membrane of supramaxilla in a ferrous area.

It is necessary to pay attention and on the design of removable denture on a upper jaw. It must answer next requirements: the distal edge of base of denture owes are thin and fluently to pass to the front departments; it is necessary to place masticatory teeth at the level of edges of language or a bit in the direction of cheek, and nowhere must hang over his back; at hypertrophyc tongue teeth must be wide enough and disposed according to a neutral muscle area. At enhanceable vomitive reflex of central origin consultation of doctors is needed – specialists.

For achievement of positive results of orthopaedic treatment the removable constructions of dentures it is necessary to conduct the careful questioning and inspection of patients taking into account allergist status, to work out a plan of individual treatment.

Thank you for attention!