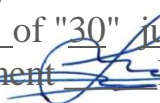


MINISTRY OF HEALTH PROTECTION OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY
FACULTY OF DENTISTRY
DEPARTMENT OF ORTHOPEDIC DENTISTRY



METHODOLOGICAL DEVELOPMENT
TO PRACTICAL LESSONS
FROM EDUCATIONAL DISCIPLINE

Faculty of dentistry, course 5
Educational discipline Orthopedic dentistry

Approved:
Meeting of the Department of Orthopedic
Dentistry of ONMedU
Protocol № 11 of "30" June 2023 year.
Chief of the department  Pavlo Rozhko

Developers:
Chief of the department, prof.,
Assoc.Doctor of Medicine Balikov.V.
Assoc.Doctor of Medicine Burdeyny V.
Assoc.Doctor of Medicine Rozumenko M.
Assoc. Doctor of Medicine Shakhnovsky I.
Assoc.Doctor of Medicine Rozumenko V.

doctor of medicine Rozhko P.
Ass Cherednychenko A.
Ass. Lysenko V.
Ass. Nazarov O.

Practical lesson No. 1

Topic: Diagnostic process in orthopedic dentistry. Differential diagnosis in orthopedic dentistry.

Goal:

1. Familiarize students with basic medical documentation
2. History collection.
3. External examination of the patient
4. Instrumental examination of oral cavity organs
5. Additional diagnostic methods (laboratory)

Basic concepts: examination of a dental patient, dental instruments for examination, X-ray diagnostics

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

- structure of the upper jaw;
- structure of the lower jaw;
- structure of the temporomandibular joint;
- the structure of the mucous membrane of the oral cavity.

Be able:

- determine the relationship between the upper and lower jaws;
- to examine the patient
- read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— History and clinical examination.

— Main complaints.

— Dental history.

— Medical history.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Rate increase before clinical prepares for orthopedic dentistry purpose not only the study of anatomy and physiology of organs maxillofacial system, but also directed on more deep mastery of practical skills, and that by myself and on general improving the quality of training of dental students.

Orthopedic treatment of patients is conducted with the aim of final maxillofacial restorations system, reproduction of the lost form of individual organs of this system, their functional relationships.

Tooth-jaws system - a set of organs and tissues, interdependent anatomical and functional, performing different but subordinate functions. It includes hard tissues - coccygeal skeleton, including upper and the lower jaws, chewing and facial muscles, salivary glands, temporomandibular joint - paired organ - moving connections lower jaw temporal bone of the skull.

You are right formed maxilla to the system the structure of each body clearly coordinated with function. At maxillofacial injury system, for example, when the body is affected by external factors environment: physical, chemical, biological, social, with due to a genetic defect or under the influence of local factors, a compensatory process first develops, i.e. compensation of the impaired function due to the activity of intact organs. But the compensatory process has limit, for which follows relatively stable deviation a disease develops from a norm that has a biologically negative meaning for the body.

Each disease is characterized certain feature or groups such, their called symptoms. There are subjective and objective symptoms.

Subjective symptoms are symptoms revealed during the interview of the patient, those unusual sensations that the patient began to experience. For example, difficulty in chewing food, pain, itching in the gums, dryness in the mouth, retention of food between the teeth, etc.

Objective symptoms are detected by the doctor in the process of examination: examination, palpation, instrumental and hardware research.

To find out the function of the maxillofacial apparatus, we sometimes have to resort to functional research methods - chewing samples, graphic records of the movements of the lower jaw, studies of muscle bio currents, etc.

The disease can be manifested by one or several objective symptoms, one of which is characteristic only for this type of disease, and others are also observed in other diseases. Examination of the patient aims to find out the symptoms, etiology and pathogenesis, the course of the disease, his physical and mental state, the function of the maxillofacial apparatus. A thorough and comprehensive clinical examination of the patient will contribute to the correct diagnosis and targeted orthopedic treatment.

Examining the patient, the doctor must clearly present the meaning of physiological norms, possible variants of the structure and functioning of individual organs of the maxillofacial system, topography and functional relationships. At the same time, he must not only reveal the phenomena, but also be able to understand them logically, determine the leading symptoms, based on the data from the study of

the patient. To do this, he must clearly present the meaning of all sections of dentistry, the clinical picture of each nosological form of the maxillofacial system.

Examination of the patient is carried out consistently according to a certain plan and includes: anamnesis (survey of the patient), external examination, examination and examination of oral cavity organs; examination of the temporomandibular joint; head and neck muscle examination, laboratory and instrumental research methods.

SUBJECTIVE RESEARCH METHODS

Taking an anamnesis is the first stage of the patient's examination. The anamnesis consists of the following sections: 1) complaints and subjective condition of the patient; 2) history of this disease; 3) history of the patient's life.

During the first visit to the patient, the patient's story about the unusual sensations (complaints) that he began to experience is carefully listened to. At the same time, it is important to find out the earliest manifestations of the disease, the nature and peculiarities of its course, to find out what the patient himself considers the cause of the appearance of unusual sensations. In some cases, the anamnesis can be very short and there is no need to go into the details of the patient's life history, in other cases, for example, when a patient is treated with complaints of a burning sensation in the mucous membrane of the oral cavity under the prosthesis, the anamnesis and all examinations will be detailed with the use of hardware and laboratory methods with the involvement of doctors of other specialties.

It is necessary to listen carefully and patiently to patients, at the same time concentrating his attention on the main, from his point of view, sensations, correctly clarifying individual points by purposefully asking questions. All this will be able to determine the range of questions required for making a diagnosis, special or additional research methods.

When listening to the patient's complaints, it is worth paying attention to the patient's reaction when presenting the complaints. This will help to form an idea about the type of his nervous activity, which is of great importance in the choice of the design of the prosthesis and the subsequent habituation of using it, more quickly establishing mutual contact between the doctor and the patient.

During the examination, it is important to obtain data about the onset of the disease, the causes of its occurrence, how it progressed before coming to the doctor, whether any treatment was used, and if it was used, then find out the type and amount of treatment.

With some diseases, it is difficult to establish the cause of their occurrence. So, for example, the appearance of pain, burning in the mucous membrane of the oral cavity under the prosthesis can be caused by a poorly made prosthesis, mechanical trauma or an allergic reaction to the base material. The same type of pain is observed in glossalgia, heat exchange disorders of prosthetic bed tissues, diseases of the gastrointestinal tract. Therefore, pain by its nature can be caused by various reasons, and the mechanism of its occurrence is also different.

Sometimes, during questioning, it is possible to establish that the deterioration of the dento-jaw system occurred during the period of some general disease or after its transfer. Then the question arises whether the detected disease is an independent nosological form or is one of the symptoms of other diseases (ulcer disease, gastritis,

diabetes, etc.) - Therefore, it is important to assess the general condition of the subject.

History of life. Life anamnesis is a "medical biography" of the patient. It is important for understanding the causes and conditions for the development of a real disease. For example, data on nutrition (artificial feeding, the use of soft pureed food during the period of formation of milk and variable bite) can approximately indicate the cause of anomalies in the development of the maxillofacial system.

Place of birth, peculiarities of natural conditions (deficiency or excess of fluorine in water) may be the cause of some non-carious lesions of the teeth.

Harmful working conditions, such as work related to the production of acids, alkalis, in the coal mining industry can contribute to the development of pathological tooth wear.

It is important to find out the transferred diseases and the presence of zagsomatic diseases on the day of the examination, because they can also contribute to the development of pathological changes in the maxillofacial system. Knowing the peculiarities of their course will also help the doctor to choose the right tactics for orthopedic treatment. Thus, in the case of a disease of the cardiovascular system (myocardial infarction, angina pectoris, stroke), in order to remove such a factor that injures this system, such as tooth preparation, it is better to recommend prosthetics with removable prostheses. If the patient has bronchial asthma, it is not possible to use odorous materials (Repin, Thiodent, Dentafol) to remove casts. They should also not rebase the prosthesis directly in the oral cavity. Otherwise, it can cause an asthma attack. Thus, based on the anamnesis and subjective data of the patient, the doctor makes a possible conclusion about the nature and form of the disease. This is a working diagnostic hypothesis that will facilitate further focused research to clarify the assumptions that have arisen.

OBJECTIVE RESEARCH METHODS

In order to clarify the assumption about the disease, to better understand the disease, a detailed examination of all organs included in the jaw system is carried out. The data of an objective examination reject or increase the probability of the assumptions about the disease. Objective examination includes: external examination, examination and examination of oral cavity organs, X-ray and laboratory (analysis of blood, strength, saliva, smears and biopsies, myography, rheography, etc.) research methods.

Objective research methods are carried out while continuing to question the patient, because it is important to know subjective feelings. For example, does the patient feel pain during probing, percussion, etc.

External examination of the patient. After the survey, they begin the examination of the person, which is carried out inconspicuously for the patient. Before the formation of the facial and cerebral skull, the person acquires individual features. The type of person is affected by the development of the brain skull, respiratory system, masticatory system or musculoskeletal system. Accordingly, four types of person are distinguished: cerebral, respiratory, digestive and muscular (Fig. 1).

The cerebral type is characterized by a strong development of the brain and, accordingly, the cerebral skull. The high and wide frontal part of the face sharply prevails over the other parts, as a result of which the face acquires a pyramidal shape with a base directed upwards (Fig. 1, a).

The respiratory type is characterized by the predominant development of the middle part of the face, in connection with which the facial parts of the head, neck and trunk acquire a number of characteristic features. The nasal cavity and its appendages are strongly developed, the maxillary sinuses are large, and the cheekbones are slightly protruding. The face has a diamond shape, the nose is strongly developed in length, its back is often convex (Fig. 1, b).



and b in Mr

Fig. 1. Types of personality (according to Bauer).

a - cerebral; b - respiratory; c - digestive; m - muscular.

The digestive type is characterized by the predominant development of the lower part of the face. The upper and lower jaws are excessively developed. The distance between the corners of the lower jaw is large. The branch of the lower jaw is very wide, massive, its coronal process is short and wide, the chewing muscles are highly developed. The mouth is bordered by thick lips. The chin is wide and high. As a result of the strong development of the lower part of the face, with the relative narrowness of the frontal part, the face sometimes acquires a characteristic trapezoidal shape (Fig. 1, c).

Muscular type - the upper and lower parts of the face are approximately equal, the hairline is usually straight, the face is square (Fig.1, g).

It should also be noted that the person's face is disproportionate: there is an asymmetry in the structure of the left and right halves. This is manifested in the fact that the left half of the skull is larger than the right, and the left half of the face is longer, the bridge of the nose does not coincide with the middle line, the tip of the nose is shifted to the side, the distance between the outer corner of the eye and the corner of the mouth is not the same on both halves of the face, the right zygomatic bone and the lower half of the upper jaw are shifted to the right, the right canine fossa is deeper and narrower, the teeth of the upper jaw and the lower part of the nasal septum are shifted to the right.

In the clinic of orthopedic dentistry, the division of the face into three parts: the upper, middle and lower thirds (Fig. 2) has become widespread. The upper third of the face is located between the border of the hair on the forehead and the line connecting the eyebrows. The boundaries of the middle part of the face are the line connecting the eyebrows and the base of the septum of the nose. The lower third of the face is the part of the face from the base of the septum of the nose to the lower point of the chin.

The division of the person into three parts is conditional, since the position of the dots changes during life. For example, the border of the hairy part of the head is

located differently in different people and moves with age. The height of the lower third of the face is also variable and depends on the type of closure and the preservation of the number of teeth. Only the middle part of the face has relatively stable dots. The lack of permanent anatomical landmarks and a strict functional subdivision of various departments determines the low value of the proposed division of the person for reconstructive orthopedics.

Anatomical formations of the lower third of the face are of greater practical importance (Fig. 3).

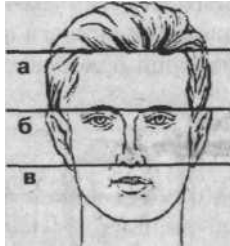


Fig. 2. Division of persons into three parts.

a - upper part; b - middle third; c - lower third,

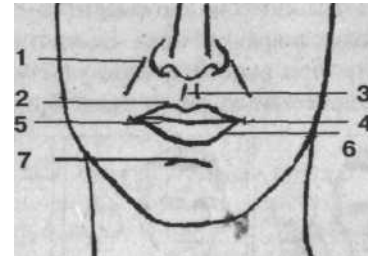


Fig. 3. Anatomical formations of the lower third of the face.

1 — nasolabial fold; 2 — upper lip; 3 — filter; 4 — corner of the mouth; 5 — lip closure line; 6 — red lip border; 7 — chin fold.

Thus, the expressiveness of the chin fold suggests the presence of a deep bite, a distal shift of the lower jaw with a decrease in the vertical size of the lower third of the face due to the loss of lateral teeth or their pathological wear. Frequent lowering of the lower third of the face is accompanied by the formation of cavities in the corners of the mouth. At the same time, they get wet and have a hyperemic appearance. Drooping of the lips indicates the absence of the front group of teeth, and if at the same time the nasolabial folds are still prominent, it can be concluded that the teeth are completely lost.

The establishment of such deviations during the examination indicates a sharp decrease in the lower third of the face between the alveolar height, which are interdependent with the absence of teeth, which are antagonists.

For orthopedic purposes, it is important to distinguish two heights of the lower part of the face: the height of relative rest and the occlusal height. The height of relative rest is characterized by the fact that the tooth rows are not closed, there is a gap between them from 1 to 8 millimeters, depending on the depth of the incisal overlap, while the muscles of the person are in a state of physiological rest. The occlusal height is characterized by tight closing of the tooth rows in the state of central occlusion, the musculature is in a shortened state. Knowledge of these characteristics is important when designing removable prostheses.

The examination of the person also allows to establish previously transferred diseases or accompanying halsomatic diseases. For example, the presence of freckles in the area of the upper lip indicates surgical interventions for a cleft. Dryness of the skin, the presence of tightening folds of the skin in the area of the upper and lower lip with a decrease in the size of the oral cavity suggests a diagnosis of systemic

scleroderma. The presence of blisters indicates the effects of chemical or thermal burns. With a number of endocrine diseases, such as acromegaly, the person has a characteristic shape. The presence of mustaches and beards in women is characteristic of Itsenko-Cushing's disease.

A careful examination of the person, accompanied by a purposeful questioning of the patient, will contribute to the correct formulation of the diagnosis, both primary and secondary.

Oral examination. Examination of the oral cavity is one of the main points, because the detection of local manifestations of the disease will determine the tactics of orthopedic treatment in the future.

The examination is carried out in the following sequence: examination of the oral cavity, assessment of the teeth, assessment of the dentition, the presence of defects in them, ratio of the dentition, assessment of the mucous membrane of the oral cavity, assessment of the jaw bones.

First of all, pay attention to the degree of mouth opening. Restriction of mouth opening is possible when the mouth opening is narrowed as a result of muscle or joint contracture and will interfere with many manipulations during prosthetics (introduction of impression spoons to remove an impression, putting on a prosthesis, preparation of teeth).

Examination of teeth. Dental examination is carried out with a probe, a mirror and tweezers. For convenience, the examination of the teeth begins with the right side of the lower jaw, then the left side with a transition to the upper jaw, continuing the examination from left to right. During the examination, the mirror is held in the left hand, and the probe or tweezers in the right. The mirror makes it possible to examine the tooth from all sides. At the same time, they pay attention to the position of the tooth, its shape, color, state of hard tissues (caries, fluorosis, hypoplasia, etc.), stability of the tooth, the ratio of its extra-alveolar and intra-alveolar parts, its position in relation to the occlusal plane, the presence of a filling, a crown, their condition. The probe determines the integrity of the crown part, sensitivity of the tooth, and the depth of the gingival pocket. At the same time, the color of the tooth is evaluated (decrease or lack of enamel shine, presence of chalky or brown spots, grooves). In depulped teeth, the enamel does not have a characteristic shine, it has a grayish-yellowish tint. Enamel is changed in smokers, in workers involved in the production of acids and alkalis. With a number of diseases, the shape of the teeth also changes.

Even at the moment during the examination of the teeth determination of tooth mobility. Physiological and pathological mobility of teeth are distinguished. The first is natural and invisible to the eye. Its existence is confirmed by a contact point and a contact area. Pathological mobility is characterized by a noticeable shift of the tooth with little effort.

Mobility of teeth is a sensitive indicator of periodontal condition, its support apparatus, which is of great importance for diagnosis, assessment of treatment results or prognosis.

Distinguish four degrees of pathological tooth mobility (according to Entin). At the first degree, there is a shift in vestibulo-oral direction. With pathological mobility

of the second degree, the tooth is displaced as investibulo-oral, and mesiodistal directions. With the third degree, the tooth, in addition, shifts vertically direction, when pressed it sinks in the hole, and then returns to the starting point position. With the fourth degree of pathological mobility, the tooth not only has visible mobility in three in the specified directions, but it can also rotate.

Pathological mobility is always accompanied by the presence of pathological gum disease pocket. Their presence and depth are determined by probe.

Pathological tooth mobility is often accompanied by pronounced atrophy of the alveolar process, as a result of which extra-alveolar part of the tooth prevails over inside alveolar. This is most characteristic of standing alone teeth. An increase in the external lever causes a functional overload of the tooth. The use of such teeth for the purpose of prosthetics requires special preparation, which consists of the shortening of the crown part of the tooth.

Restored defects of the crown of the tooth with a filling, a crown, are carefully inspected, paying attention to the safety of the filling, compliance of the artificial crown with the proposed requirements (tight fit of edge crowns to the neck of the tooth, its integrity, color change etc.).

The results of the dental examination are recorded in the dental formula. At the same time, milk teeth are marked with Roman numerals, permanent ones with Arabic numerals.

When examining the teeth and making a clinical diagnosis widely used method of percussion (tapping), probing and palpation.

Percussion conduct with the handle of tweezers or a dental probe, lightly tapping on different surfaces of the tooth. Percussion of a healthy tooth audible a loud sound and the patient does not respond to it. When changing in the pulp, periodontium there are painful sensations of varying intensity. Percussion conduct carefully, and appearance of pain with a weak impact does not require further increase strength impact. Teeth with dead pulp, depulped with sealed channels produce an empty sound. Always for comparison conduct percussion and adjacent teeth. At expansion of the periodontal gap muffled sound is heard. Dullness of sound occurs as a result of impaired blood circulation in periodontics, the occurrence of edema. Swollen tissues at the same time, they seem to absorb the sound. During a pathological process in root tips is noted dulling of the sound during percussion.

Probing used to determine the depth of caries cavities, the nature of the softened tissue, as well as for study periodontal condition. The term periodontium contains a complex formations, which have genetic and functional unity: teeth, tissues periodontium, bone tissue and periosteum, gums. In the neck of the tooth in the gums is circular binding, which attaches the gum to the tooth and protects it periodontium from external injuries. Violation of the integrity of this formation leads to inflammation formation different in depth pathological gum disease pocket. To determine the depth of the pocket, an angle probe is used, the end of which is blunt, and there are millimeter ones on the surface distributions. The probe is effortlessly inserted into a groove in turn from all sides of the tooth. If the probe sinks by 1-2 millimeters, then they speak about the lack of a pocket or they call it physiological

autumn pocket. When immersing the probe from the anatomical neck to half the vertical size of the coronal part of the tooth or more, they speak about the degree of alveolar wall atrophy.

Availability of pathological autumn pockets should be differentiated with a wrong ash tree pocket, which will be formed during inflammation and significant swelling of tissues of the marginal periodontal land with hypertrophic gingivitis. At conducting appropriate treatment, slimy the gum returns to normal and the pocket disappears.

With a number of diseases happens reduction of voluminous, as a result of which she is staying on certain levels in relation to the root of the tooth. In this case they speak about the clinical neck of the tooth.

Palpation used to determine tooth mobility. Tooth mobility is a symptom of many diseases: periodontitis, acute and chronic trauma resulting from inflammatory processes and swelling of surrounding tissues.

When examining and instrumental examination the absence of teeth is also established. At the same time, they find out through questioning removed the tooth or primary takes place adentia.

Rating of the tooth rows. Examination of dental rows is conducted separately. With determine: 1) the number of teeth that remained; 2) presence and topography of the defect; 3) replacement of defects with prostheses and their kind; 4) nature of contacts with close by teeth; 5) shape of dental arches; 6) level and position of each tooth in relation to occlusal plane; 7) kind of bite.

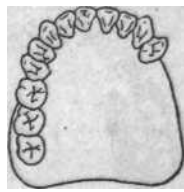
You are right formed maxillary tooth rows system represent a single entity as in morphological, and functionally. The unity of the tooth row is ensured by interdental contacts, alveolar process and periodontium.

Interdental contact points in front of teeth located near cutting edge, as sideways - near chewing surface for the proximal sides. Below them are triangular spaces, filled by reason to the alveolar process, which are filled with papillae. They are protected in this way from damage of food. In addition, the pressure falling on the teeth is distributed not only on the root of the tooth, but also on interdental contacts on neighboring teeth, ensuring the unity of the dental row.

With age contact points are eroded and contact pads will be formed instead of them. Abrasion they are proof of the physiological mobility of the teeth. With there is a mesial shift of teeth, as a result of which takes place shortening of tooth row up to 1 cm. At the same time, no violation of the continuity of the dental arch.

When examining the dental rows establish the absence of a tooth (teeth), the cause of its loss is revealed. The tooth may not erupt due to the absence of the beginning of a permanent tooth, then they speak about primary or congenital adentia. If the tooth loss occurred after eruption, they speak about secondary or acquired adentia.

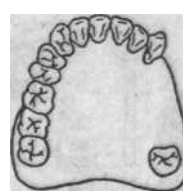
Exist many there are no variants of defects of teeth. To systematize their proposed classification of dentition defects resulting from tooth loss. The most common in our country and abroad is a classification proposed by Kennedy that takes into account position of defect in the dental arch and its length (Fig. 4). All defects of dental arches are divided into 4 classes.



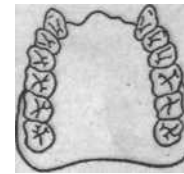
1st class



2nd class



3rd grade



4th grade

Fig. 4. Classification of defects of tooth rows according to Kennedy

To the first grade are put dental arches with bilateral final defects formed as a result of the loss of chewing teeth.

Second class constitutes dental arches with a unilateral terminal defect.

The third class includes dental arches with an intermediate defect in the lateral part on the one hand.

In the fourth class, only the front teeth are missing.

If there are several defects of different classes in the dental arch, then the dental arch is assigned to the smaller one one by one class. For example, with a dental formula

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there is a defect of the fourth and first class, in this case dental arches are put to the first grade.

At the physiological norm every tooth has certainty concerning occlusal plane. *Occlusal plane*—plane, drawn from the cutting edge of the lower central incisor jaw to the top distal-cheek bump the second (the third) molar. The teeth are located at orthognathic bites in relation to occlusal surface in certain order: cutting edges of the incisors, canines and distal buccal tubercle of the third molar relate to planes, the first and second premolars and molars are located lower of this plane. Central incisors and canines of the upper jaw by 2/3 mm (to the depth incisor overlapping) below occlusal plane. That's it! Location of teeth ensures the curvature of the dental arch in front-back and in lateral directions.

The appearance of dental defects disturbs not only morphological the unity of the dentition, but also leads to a complex reconstruction of it initially in region of defect, and then spreads for the entire dentition. This reconstruction manifests by tilting the teeth to the side of the defect, vertical movement of teeth devoid of antagonists, rotation around the axis and by others violations that lead to deformation of occlusal surface

A distinction is made between primary and secondary tooth movement. Primary movement begins and ends with teeth in education dental arches. Under secondary displacement accepted understand change of position teeth after their eruption and the formation of tooth rows due to the appearance of dental arch defects or as a result of periodontitis, tumors of jaw, traumatic occlusion.

The most common is the secondary movement of teeth, which occurs in different directions.

The following types of secondary displacement are most common.

The first group.

1) Vertical movement of upper teeth unilateral or bilateral.

- 2) Vertical movement of upper and lower teeth, unilateral or bilateral.
 - 3) Mutual vertical movement upper and lower teeth unilateral or bilateral.
-

The second group.

- 1) Distalomesial shift of the upper teeth unilateral or bilateral.
- 2) Distalomesial shift of the lower teeth unilateral or bilateral.

The third group.

- 1) The inclination of the upper teeth in the palatal or buccal side.
-

- 2) The inclination of the lower teeth in the palatal or buccal side.

- 3) The fourth group.
-

- 1) Turning the tooth around longitudinal axis
-

- 1) Combined tooth movement.

Secondary movements of teeth sometimes come to the fore, determining the nature of the entire clinical picture, and determine the relative typicality of treatment measures for different types of secondary movements. Hence the importance of their detection at clinical examination of the patient.

Ratingslimy statethe lining of the mouth. healthy slimy the shell is pale pink dye in regions gums and pink in others areas. In pathological processes staining mucous shells is changing, various elements of defeat appear on it. The most common of them are: erosions - a surface defect, aphthae - small areas yellow-gray ulcers color a bright red rim of inflammation, ulcers - the primary morphological element in the form of a defect with unequal and undermined edges and a bottom covered with a gray coating.

The patient complains about areas redness slimy shell, bleeding, swelling and burning slimy shells of the prosthetic bed.

Cause of occurrences specified symptoms may be: mechanical trauma, heat exchange disorders slimy shells due to destroy heat pipes and bridges plastic prosthesis, toxic-chemical influence of plastic ingredients, allergic reaction to plastic, systemic diseases (avitaminosis, endocrine diseases, diseases of the gastrointestinal tract, mycosis, etc.).

During the examination it is important to set the nature of the defeat slimy shell, the reason that caused defeat, stages of the disease (aggravation, remission). All these factors are important for the choice of the method of treatment and the material from which the prostheses will be made, as well as the definition of the beginning of the term prosthesis. For example, if available erosion, traumatic ulcers, prosthetic is conducted after their complete healing. When detecting manifestations of cavity the mouth is red flat lichen, leukoplakia and other chronic diseases, prosthetic is conducted during remission.

When the above lesions are detected slimy shell cavities mouth, it is necessary to carry out additional research (blood analysis, cytology), consult with a therapist-dentist and, if necessary, dermatovenerologist for the purpose of differentiation. For example, traumatic ulcers must be differentiated from cancerous and tubercular ulcers, syphilitic ulcers.

Long-term trauma can bring to hypertrophy slimy shells and formation fibroma, papilloma.

Examination of the jaw bones. During the inspection of the mouth, palpation at the same time researched formations on the bone bed. Attention is drawn to the prominence of the alveolar process, vaults of the hard palate, maxillary bumps. Necessarily is being investigated zone of the median seam for definition of torus (Fig. 69, a).

In region of edentulous alveolar process sometimes are determined sharp bony protrusions formed as a result of incomplete overgrowth of tooth and protruding interdental partitions. These performances are painful because the membrane covering them is thinned, without special surgical preparation of these plots prosthesis conduct not advisable.

On the lower jaw in some cases it is possible to see the presence of bone spurs (exostoses) with language on right side; and the left half of the jaw, their considerable expressiveness requires special preparation before prosthetics with removable prostheses.

Examination of temporomandibular joint. At formation of dentition defects, due to the loss of chewing teeth, pathological attrition groups that remained, teeth, diseases of periodontal, decrease between alveolar distance varies position of the lower jaw, which conditions change position of articular head and all ratios of joint elements. All this leads to joint disease.

The synchronicity of the articular shift of the head in relation to the articular disc and articular fossa at movements of the lower jaw may be affected by muscle diseases, especially external pterygoid muscle, central nervous system, diseases of the joint itself (arthritis, arthrosis). Therefore, during the examination, it is important to identify the root cause of the joint disease, because the method of prosthetics and the nature of therapeutic treatment depend on this.

The following complaints are most often presented in the joint: swelling in region of joint, difficult opening or closing the mouth, pain, clicking while doing so, headache, burning in tongue, dry mouth. The palpation method is used to examine the joints. For this index fingers are placed in front of the surface of the joint and ask the patient to slowly open mouth. With palpators determine the surface of the joint and the back articular zone cracks. Moving your fingers forward and pressing on the projection of the joint gap and joint heads, determine painful dots. Palpation conduct with closed rows of teeth, at the moment of opening and with wide open mouth.

The sound of friction, crepitation in the joint may be associated with a violation of synovial secretion liquid. Goldfinch, the crunch at the moment of opening the mouth is more due to a decrease in the height of the bite and a distal shift of the lower jaws, and, therefore, also articular head. Crepitation, crunching, clicking are possible to determine and methods of auscultation using a phonendoscope. With the appearance of sick in the joint, clicking and crunching, it is necessary to conduct additional studies (x-ray, rheography, arthrography).

LABORATORY AND INSTRUMENTAL RESEARCH METHODS

Laboratory and instrumental research methods are considered additional because will be used not always. The purpose of these studies is establishing and confirmation of an accurate diagnosis.

X-ray examination based on obtaining and readings X-ray images are used for this different techniques:

- inside and extraoral radiography;
 - tomography;
 - panoramic radiography.
-

Radiography is the most common and available method of X-ray examination of teeth, alveolar processes, jaws, bones of facial skeleton and skull.

Radiography gives data about state of hard tissues of the crown and root, dimensions and features of the pulp chamber, root canals, width and character of the periodontal gap, condition of walls of the alveolar process. It can also be studied with its help structure of jaw, correlation of elements of the temporomandibular joint and at the same time detect the presence of pathological processes in regions, unavailable for external review, deformation of maxillofacial bones region.

On an X-ray image negative: bone tissue has light shades, soft tissues, air spaces -dark. Enamel has more light tone, what cementum and dentin. Carious cavities have dark shades. Cavity tooth periodontal the gap looks like dark lines of different configurations.

An intraoral radiograph allows to determine carious cavities, retinues teeth, pulp topography, canal patency, availability of denticles, state of periapical tissues overhanging the edges of the crowns, the degree of bone atrophy of alveoli.

Tomography. X-ray examination, convenient for studying structural changes of the alveolar process and jaws, turned out to be insufficient during research of temporomandibular joint, because it has a complex structure and is situated near ground skull. A good X-ray image of temporomandibular joint using conventional radiography methods is almost impossible.

An ordinary X-ray of the joint gives presentation only about gross changes in articulation (fractures, sharp deformations of articular surfaces during inflammatory and degenerative processes). Subtle changes in the initial stages of the disease cannot be detected by this method, and the joint looks like a radiograph normal.

All this, naturally, prompted to search for new ones, more done methods of X-ray examination of the joint. To such methods belong tomography. She allows to get X-ray image of certain cartilage, located at one or another depth. This method makes it possible to study correlation of elements of the temporomandibular joint on certain depth. It can also be detected small structural changes in the bones of the joint, caused by general, as well as local (function disorders, trauma) diseases.

Panoramic radiography (panorgraphy). Panoramic radiography is offered by Blackman. She allows to get a complete picture of all teeth in the form of a panoramic image with sufficient sharpness with a 2-fold increase and significantly less exposure, what with a normal picture. Filming is conducted during movement of the object and the cassette, and the X-ray tube remains without movement. With are determined only those layers of object which removed from at the same speed as the film. These layers are manifested more sharply, and others are lubricated. The X-ray tube is placed behind, below the back of the head. At production of the picture, the chair with

the patient rotates around hourly shooters, and a cassette with X-ray film in reversed direction. As a result of similar arrangement of the patient and film turns out expanded image of the jaws. Accessibility X-ray method gave birth in some doctors' presentation about its harmlessness. It brought to the unreasonable expansion indications for radiography of teeth and alveolar process. Meanwhile, X-ray exposure is not indifferent to the body and must be remembered borders its application.

When examining the patient before prosthetics, an X-ray of the teeth is shown with affected periodontium, in case of suspicion of hidden carious cavity, the roots, closed mucoid shell, teeth with fillings, teeth that were a support bridge-like prostheses, staplers, covered crowns, teeth with pathological attrition teeth, changed in colors, etc.

Radiography. Recently, devices have appeared that combine X-ray in itself installation and video camera, so-called radiographs. They provide an opportunity to receive on the screen with the help of a video camera images of tooth tissues and soft tissues enlarged by 27 times. In addition, with the help of X-ray imaging you can get a photo of the image received on the screen, which favorably distinguishes it from an ordinary X-ray machine, because no time is needed for developing the film. Image in the photo it turns out to be more clear, what on X-ray film. X-ray visiographer located directly in the doctor's office.

Methods of determining masticatory pressure. Absolute power chewing muscles. Chewing muscles pose to power muscles, that is developing mainly strength unlike other muscles, which tend to develop mainly speed.

Absolute muscular force is determined by the number of fibers included in the composition of this muscle, that is, by the area of the physiological diameter. The more fibers in the muscle, that is, the more are physiological diameter, that more effort can develop this muscle. Weber respects, what "power other things being equal, the muscle is proportional to the transverse section her".

According to Weber, a muscle with a diameter of 1 cm develops strength, equal to 10 kg. Muscle, what raise the lower jaw, have the following diameters intersection: temporal muscle — 8 cm, masticatory muscle — 7.5 cm, external wing-shaped muscle - 4 cm. going out from cross-sectional data, absolute power of the temporal muscle is equal 80 kg, chewing gum muscles - 75 kg, external pterygoid - 40 kg, i.e. general absolute power muscles unilateralis equal to 195 kg. General absolute power chewing muscles of the right and left parties 290 kg (195x2).

Absolute power muscles, established theoretically by adding indicators of the physiological diameters of the masticatory muscles that raise the lower jaw, and multiplying the obtained sum by the possible development strength every square centimeter of the cross section muscle, of course, does not correspond to reality. At common chewing muscles cannot develop at work strength, equal to 290 kg. Absolute power as chewing, as well as other muscles, develops only in moments of danger and mental turmoil, and in every day during life, a person does not need to develop such when chewing food strength. Therefore, researchers are mainly interested in the pressure that develops on certain Israelis for biting and chewing food

of the appropriate consistency (meat, bread, crackers, etc.). It is also important to know enduranceperiodontal diseaseteeth to chewing pressure, which would allow orientation inacceptableloading it during prostheticsbridge-likeand other prostheses.

Enduranceperiodontalare measured by specialdevices-gnathodynamometers. Gnath dynamometerfirst proposed in 1893Bleck. After that, others based on the same principle were constructed. Instrumentsupplied with a dental pad. When closing the mouth, the teeth are transferred through the platform to the springcertainpressure registered on the scale in kilograms. In recent years, new designs have been proposedgnathodynamometer, which perceivesdevicewhosestrain gauges.

Methodgnathodynamometry revealednot enoughaccurate, because thesedevicesmeasure enduranceperiodontalto the pressure that has onlyone way(vertical or lateral). When actingstrengthon the tooth, the pressure is distributed and acts, in addition, both on the supporting tooth and on the nearby guard.

Static methods of determining masticatory efficiency. To determine enduranceperiodontaland the role of each tooth in chewing, special tables are proposed, whichreceivedthe name of statistical systemsaccountingchewing efficiency. In these tables, the degree of participation of each tooth in the act of chewing is defined as a constantsize, which is expressed as a percentage.

When compilingspecifiedtables the role of each toothdetermined by the valuechewing and cutting surface, number of roots,sizeof their surface, the distance at which theyremovedfromcornerjaws Several tables are offered,builtby the sameprinciples(Duchamp,island,Mamluketc.). In our countryreceived distributionstatic systemaccountingchewing efficiency, developed by N.I.Agapov(Table 1).

Table 1 Chewing coefficients of teeth according to N.I. Agapov

Teeth		1	2	3	4	5	6	7	8	That'
Chewing coefficients, %	V/Ch	2	1	3	4	4	6	5	—	25
	N/A	1	2	3	4	4	6	5	—	25

N.Y.Agapovtook the chewing efficiency of the entire dental apparatus as 100%, and as a unit of chewingabilityand enduranceperiodontal- small incisor, comparingwithall other teeth. So,everyhis toothtableshas a constant chewing factor.

In this table, N.Y.Agapovmade a correction, recommending atdeductionchewing efficiency of the remaining dentition, take into account the antagonistic teeth. For example, with a dental formula

654001 1 100345

654001 | 100345

chewing efficiency is equal to 58%, and with dental formula

654001 | 100345

000000 I 000000

it is equal tozero, since there is no pair of antagonists.

As already noted in the system Agapov the value of each tooth is constant and does not depend on state of the periodontium. For example, the role of fangs in chewing is defined always by the same factor regardless of whether the tooth is resistant or has pathological mobility. It is a serious disadvantage of the proposed system.

V. Yu. Courlandskaya static system is proposed accounting supporting apparatus of the teeth, named the periodontogram. Periodontogram comes out by recording data about every tooth in a special table.

As in other static schemes, in periodontogram to everyone zuzhi healthy periodontium appropriated conditional coefficient. These coefficients folded based on proportional endurance ratios periodontal different teeth to the load that was determined by gnathodynamometry with an intact periodontium. Coefficient of endurance periodontal to the load is correspondingly reduced at different degrees of atrophy of the hole in different teeth. With atrophy IV degree periodontal endurance to load is not towns (the tooth is to be removed).

In practice accept and respect, that the periodontium of the tooth is able to bear the load twice as much as the load during food processing.

SCHEME OF FILLING THE HISTORY DISEASES

I. Official data:

a) F. I. O. _____

b) _____ age

c) _____ profession

d) _____ address

II. Complaints of the patient (disorders of mastication, aesthetics, defect of _____ crowns, _____ mobility, increased abrasion teeth, pain in temporomandibular joints; pain under the basis of a schematic prosthesis, pain in a tooth under an artificial crown, etc.)

III. Medical history:

1. WITH what age, beginnings lose teeth and which, in which sequence (incisors, canines, premolars, molars).

2. Does he mark the patient communication dental pathology with working and living conditions, transferred diseases (rickets, infectious disease, harmful habits, etc.).

3. What were they about? removed teeth (destruction of the crown, mobility, increased abrasion, osteomyelitis etc.).

4. Does it mark patient after losing teeth appearance diseases _____ gastrointestinal tract (disturbance of taste, appetite, belching, nausea, vomiting, feeling balance in bed are before and after meals pain etc.).

5. Did the loss of teeth affect speech.

6. Or after tooth loss to time restrictions reception food (visible solid food on more soft). On which side mainly chews food.

7. How dental care is carried out with what age and whether regularly (using a toothbrush, powder, paste, brushing teeth only in the evening or in the morning, before meals, after meals).

8. The patient receives prosthetics for the first time or again. Uses removable or fixed prostheses (for how long, feedback on prostheses).

9. Reasons for dissatisfaction with prosthetics (pain, poor fixation of the removable prosthesis, unsatisfactory aesthetics, burning sensations, limy shell cavities, mouth under a prosthesis, nausea, fatigue of chewing muscles, obstacle speech, diction disorder, long habituation, decubitus ulcers, etc.).

10. Evaluation of the old prosthesis (esthetics, occlusion, fixation, state of artificial teeth, state of tissues of the prosthetic bed, Stanklammerov, relation to ash regions, etc.).

11. What kind of general disease the patient suffers from (anemia, allergy, stomach ulcer, 12-ring intestines, diabetes, hypertension, hemiplegia, polyarthritis, bronchial asthma, neuralgia, tripleneur, etc.).

12. Presence of bad habits (smoking, use of alcohol).

13. Does the patient constantly or only recently use pharmacological drugs, which ones exactly.

14. What is the cause of worry, anxiety before future orthopedic treatment. What causes concern.

15. How was held in the past anesthesia during treatment or removal of teeth, its effectiveness.

16. Features of pre-morbid personality (a normal subject, without distinct expressiveness of individual features, pensive-anxious-distrustful, sloped, doubtful, demonstrative, hysterical, excitable, passive, powerless, haunting, withdrawn, unsociable personality).

IV. Objective data:

A) *External inspection.*

1. Type of persons (conical, reverse conical, square, round).

2. State of skin coverings of persons (colors, turgor, rash, flasks, etc.).

3. Prominence of the chin and nasolabial folds (moderately expressed, smoothed, in-depth).

4. The nature of the closure of lips (lips close without tension, tense).

5. Corners of mouth (dropped, not dropped), there are zoids, absent.

6. Position of chin (directly, offset sideways, protruding falls).

7. The height of the lower third of persons (reduced, increased, unchanged).

B) Research of temporomandibular joint (TMJ).

1. Degree of mouth opening (free, limited).

2. Nature of movement of lower jaws (smooth, push-like).

3. The presence of mixing of the lower jaws (right, left, missing).

4. Data of palpation of head of lower jaws (head-swimming movements, push-like).

5. Auscultation data (is defined as crunch, crepitation, clicking).

b) *Review of cavities of mouth*

1. General characteristics of limy shell cavities of mouth (colors, humidity, presence of pathological formations: polyps, flecks, aphthae, erosions, ulcers, etc.).

2. Salivation (abundant, poor, normal).

3. State of hygiene of cavities of mouth (good, satisfactory, unsatisfactory).

4. Dental formula. Kindbite (orthognathic, direct, biprognathic, prognathic, progenic, cross, deep, open, fixed, non-fixed, ratio of edentulous alveolar processes of the upper and lower jaws).

5. Descriptionspeciesbite:

- and) signs of closure, are concerned to all teeth, signs front teeth closing,
- b) signs of closing of the chewing teeth in the buccal-palatine direction,
- in) signs of teeth clenching anterior-posterior direction.

6. Dental examination:

- and) the shape of the dentition (elliptical, parabolic, trapezoidal, flattened, etc.),
- b) position individual teeth in the dental row,
- in) deformations of the tooth row (classification according to A. I. Gavrilov, Kennedy).

7. Dental examination (shape, colors, state hard fabrics: defeat caries, hypoplasia, fluorosis, the presence of fillings, their state).

8. Examination periodontal:

- and) state gums (inflammation, atrophy),
- b) rating ash tree pockets (depth, suppuration),
- in) prevalence of the process,
- d) stability teeth,
- e) correlation extraalveolar and inside the alveolar part teeth

9. Number couple antagonistic teeth.

10. Characteristics of defects of dental rows (kind, localization, form, size).

11. State edentulous alveolar process of the upper jaws:

- and) nature and degree of atrophy (even, uneven, bigger, small, medium),
- b) kind vestibular scat of the upper jaw (sloping, rapid, with canopy)
- in) the presence of bone protrusions on the alveolar process after tooth extraction (localization, length, depth raised rheumatism, soreness of bony protrusions when pressed),
- d) the shape of the ridge of the alveolar process in the front and lateral sections (sharp, rectangular, truncated cone, semi-oval, flattened, wide ridge, narrow comb),
- e) the presence of a comb that overlaps (localization, size, degree of shift),
- is) expressiveness of the upper tubercles jaws (form of vestibular and distal surfaces, right, left).

12. Characteristics of the relief of solid the sky:

- and) the shape and height of the solid the sky (high vault, low, medium, wide, narrow),
- b) state a solid seam the sky (concave, convex, flat),
- in) palatine torus (form, size, localization),
- d) shape of the distal edge of the solid the sky (vault, flat).

13. Characteristics limy shells of the prosthetic bed on the upper jaw:

- and) compliances limy shell of solid the sky,
- b) distinctness of buffer zones,

- in) expressiveness of transverse palatal folds in the front part of the hard the sky,
- d) expressiveness of palatal blind holes, their localization (on the "A" line, in front of the "A" line, behind the "A" line),
- e) incisor papillae(size, susceptibility),
- is) placeLocationtransitional fold in relation to the alveolar process (base, at the levelstingray,inpeaks),
- g) degree of expressiveness, shape and place of attachment of the lip,frontandlateralbuccal-alveolarweighed slimy(base, tostingrayupper tuberclejaws, the top of the bump, to the aponeurosis of the soft musclethe sky).

14. Statebone base of the prosthetic bed on the lower jaw:

- and) nature and degree of atrophy of the alveolar process (even, uneven,bigger, small, medium),
- b) size, form and localizationexostoses,
- in) availabilitychin-tongue torus(size, form),
- d) expressiveness of internal oblique lines, their shape (sharp, pointed round), soreness when pressed,
- e) the presence of boneformationon the alveolar process after tooth extraction (localization, shape,size, sensitivity to pressure),
- is) the shape of the ridge of the alveolar process in the front and lateral parts of the lower jaw (sharp, rectangular,everyonehonecone, semi-oval, flattened, wide ridge),
- g) the presence of a dangling ridge on the lower jaw (localization,size, degree of shift).

15. Characteristicslimyshells of the prosthetic bed on the lower jaw:

- and) placeLocationtransitional fold in relation to the alveolar process (base, at the levelstingray,inpeaks),
- b) degree of expressiveness, shape and place of attachment of the frenulum of the lower lip,languages,frontandlateralbuccal-alveolarheavy mucus(base, tostingray, to the top of the alveolar process),
- in) the presence of foldsslimymembranes of the alveolar process (Location,direction, straighten up, don't straighten up),
- d) slimytubercles (form,size, mobility, consistency, tenderness during palpation).

16.Sizeand the shape of the sublingual space (right, left).

17.Sizeand the shape of the sublingual space in the front part of the lower jaw (large, small, in the form of a slit, triangular, trapezoidal).

18.Submandibular salivary glands (presence, theirpositionatmotion pictures: protrude above the crest of the alveolar process, do not protrude).

19.Sizeand tonelanguages(increased, not increased, tonemoderate, elevated).

20.Bottom muscle tonecavitiesmouth, cheeks andlips(moderate, increased, decreased).

V. Dataspecial examination methods:

1. X-ray characteristics of teeth andclose teethfabrics

(state hard tissues of the crown and root, dimensions and features cavities tooth, root canals, width and characteristics periodontal fissures, state compact plates, the walls of the alveoli and the spongy substance of the alveolar process, the presence of foci of chronic inflammation, etc.)

2. X-ray examination data TMJ.

3. Tomography and teleroentgenography data.

4. Data on the study of diagnostic models of the jaws.

VI. Diagnosis and differential diagnosis.

Based on the data of the patient's clinical examination, a diagnosis is made, which should consist of the main and accompanying. 1. The main disease and its complications:

a) to the underlying disease poses what prompted the patient to contact the orthopedic clinic;

b) Complications should include those violations that pathogenic related to the underlying disease.

2. Concomitant diseases are those that are treated dentists

other profiles. If necessary is conducted differential diagnosis.

3. In the diagnosis "Partial loss of teeth" should be indicated kind defect of the dentition according to Kennedy, and "Complete loss of teeth" is a type of edentulousness jaws according to I.M. Oxman.

VII. Training plan cavities mouth for prosthetics:

1. General rehabilitation measures (removal of dental deposits, treatment of teeth, removal of roots and teeth of mobility III degree, treatment of diseases slimy shell cavities company, etc.).

2. Special training cavities mouth (depulped teeth, removal occlusal violations, orthodontic preparation, alveolotomy, excision of the hips, transfer of the place of attachment of the bridles, heavy mucus, deepening the eve of the day, dna cavities company, etc.).

VIII. Orthopedic plan flow.

Specify which one kind prosthetics (direct, near, remote). To justify the choice of the design of the prosthesis as a treatment tool.

IX. Diary of orthopedic treatment.

All patient visits are recorded by indication dates and a detailed description of the performed clinical procedures. During repeated visits to the patient after placing the prosthesis, complaints are described, data objective research, the nature of the care provided and the peculiarities of the patient's getting used to the prosthesis. To evaluate the immediate results of prosthetics (prosthetic quality, functional properties, state and the reaction of the tissues of the prosthetic bed, the number of corrections, recall patient, etc.).

X. Epicrisis and prognosis of orthopedic treatment.

The name, age and complaints of the patient on the day of the visit to the clinic are indicated. What was the diagnosis? Beginning and end of treatment. Kind prosthetics and prosthesis design.

to describe state the patient as a result of the treatment and indicate the prognosis.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

3.4. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka. - K.: Medical Center "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>

- National Scientific Medical Library of Ukraine <http://library.gov.ua/>

- National Library of Ukraine named after V.I. Vernadskyi <http://www.nbuv.gov.ua/>

Practical lesson No. 2

Topic: Examination and treatment plan. Functional methods of research of the chewing apparatus. Restoration of functional occlusion with various types of prosthetics.

Goal:

1. Familiarize students with basic medical documentation
2. History collection.
3. External examination of the patient
4. Instrumental examination of oral cavity organs
5. Additional diagnostic methods (laboratory)
6. Restoration of functional occlusion

Basic concepts: examination of a dental patient, dental instruments for examination, x-ray diagnostics, occlusion, prosthetics

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

- structure of the upper jaw;
- structure of the lower jaw;
- structure of the temporomandibular joint;
- the structure of the mucous membrane of the oral cavity.
- Occlusion and articulation
- Types of prosthetics

Be able:

- determine the relationship between the upper and lower jaws;
- to examine the patient
- read x-rays

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

- History and clinical examination.
- Main complaints.
- Dental history.
- Medical history.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

FUNCTIONAL RESEARCH METHODS

Functional chewing samples. Static methods appeared hardly acceptable for determining the degree of disturbances in masticatory efficiency and not only because they are not accurate enough to determine the role of each tooth in chewing and perception of chewing pressure, but also because they are not taken into account: kind of bite, intensity of chewing, strength of chewing pressure, influence of saliva on food grinding, role of languages in the mechanism of food lump formation. Therefore, to take into account the influence of all the above-mentioned factors, were proposed functional (chewing) samples that allow get more correct presentation about chewing dysfunction.

Chewing force of muscles— in physiology, the force that can be developed by all the masticatory muscles that raise the lower jaw. It is, according to Weber's data, an average of 390--400 kg (the physiological diameter of all three pairs of levator muscles of the lower jaw is 39 cm², and 1 cm² of the area of the physiological diameter of the muscle can develop force in 10 kg. Hence, it is necessary that the entire masticatory muscles can develop a force of 390-400 kg. The physiological diameter of the internal pterygoid muscle is 4.0 cm², typical for the masticatory muscle is 8 cm², the temporal muscle is 7.5 cm², that is, the internal pterygoid muscle can develop force in 40 kg, typically masticatory—75, and temporal—80 kg, only on one side 195 kg, and on both.—390 kg.

Chewing pressure -the force exerted by the masticatory muscles on one side of grinding food. Vertical and horizontal masticatory pressure are distinguished. It is measured in kilograms using a gnathodynamometer.

Chewing efficiency— the degree of crushing of food by the teeth. The masticatory efficiency is measured as a percentage compared to the intact dentition-jaw system, the masticatory efficiency of which is taken as 100%.

Chewing test according to Christiansen -the first of the methods for determining chewing efficiency. He investigated the degree of crushing of a certain food - a forest nut or a coconut. They took it for a sample 5 min, after 50 chewing movements the patient spat the chewed mass onto a strainer with a diameter of 2.4 mm. The mass was sieved, the remainder was weighed. The remainder divided by 5 and multiplied by 100% was the Christiansen coefficient.

Chewing test according to Gelman— a modified technique of Christiansen, proposed for assessing the functional state of the maxillofacial system and

determining masticatory efficiency. The test was based on the author's observation that the maxillofacial system is intact. 5 almonds are ground in 50 seconds to the size of the particles sifted through a sieve with holes with a diameter of 2.4 mm. If there are defects in the tooth rows in 50 seconds, the almonds are not completely crushed, and part of them remains on the sieve.

Methodology: 5 almonds are used and suggest that the examinee put the almond in the mouth and start chewing after the "start" signal. The start of chewing is marked on a stopwatch. After 50 sec. at the "step" signal, the subject stops chewing, spits out the chewed mass into a tray, rinses his mouth and spits out water into the same cup. For disinfection, add 5-8 drops of a 5% sulfa solution to the tray. The contents of the tray are filtered through cheesecloth, and the residue is evaporated into a water tank. Then the mass is carefully sifted through a sieve, stirring often, preferably with a wooden stick. Part of the mass remaining on the sieve is carefully poured into an hour glass of the appropriate size and weighed. The percentage of chewing disorder is calculated according to the following formula. Let's assume that there is a lot of weight left on the sieve 2.62 g, then:

$5:2.82 = 100:X$, where X is the percentage of chewing disorder

$x : 2.82 = 100 : 5$

$x = 2.82 \times 100 : 282 : 5 = 56.4\%$.

Chewing efficiency is $100\% - 56.4\% = 43.6\%$.

Chewing test according to I. S. Rubinov -proposed to assess the functional state of the maxillofacial system. Technique: products with different physical properties are used (nuts, breadcrumbs, soft bread, etc.). On the basis of the chewing test, it was found that, as the state of the dental system deteriorates, the time of chewing before swallowing when processing solid food substances (nuts) is prolonged, and despite this, food particles of relatively large sizes are swallowed. It is known that in adults with a complete chewing apparatus, the duration of chewing the kernel of one nut before swallowing is on average 14 seconds, and the residue in the food is zero (according to the Christiansen method), and in the absence of 2-3 teeth, the chewing time is 23 seconds, and part of the kernel remains insufficiently fragmented. In cases of intact and broken dental system, the time spent chewing soft food differs little. I. S. Rubinov instead 5 almonds for the sample will use one kernel of the nut. This makes it possible to judge the functional state of individual groups of teeth. The processing of the obtained core chewing data is carried out according to the method of S. E. Gelman.

Graphic methods of studying chewing gum movements lower jaws. Various diseases cavities mouth and masticatory muscles disrupt the biomechanics of the lower jaw. As the patient recovers movement lower jawscan normalize. Normal movementsof the lower jaw, their disorders and dynamicsrestorationcan be studied using a graphical method. At this time, the recording of chewing gum movements lower jawscan be done with different devices:kymography,oscilloscopesetc.

I.S. Rubinov the record of ruminants was developed in detail movements lower jaws (mastication) and the decrypted value of each of the component parts of the graphic record.

Study of the function of masticatory muscles.

The function of the masticatory muscles changes not only during various movements of the lower jaw, but also in connection with pathological states of the chewing apparatus: loss of teeth, joint disease, change in bite height. Therefore, it is desirable to fully characterize the clinical picture accompanying this or that disease of the masticatory apparatus by the data on functional state by the masticatory muscles by myotonometry and electromyography.

By using myotonometry the tone of the masticatory muscles is measured. Devices, applied for this purpose, are called myotonometers. The degree of tension (density) of the muscles is judged by the amount of force, of which the device turns onto a given depth. The arrows of the dial show the degree of muscle tension in grams.

Electromyography. Under electromyography understand measurement of biopotentials of muscles in general and chewing in particular. They appear during muscle contraction currents. These currents can be enhanced with special devices and record it on the photo paper of the oscilloscope in the form of a curve. This research method is called myography.

Thermal diagnostics. Determination of the reaction of the tooth to temperature stimuli (heat or cold) — thermal diagnostics — one with the simplest methods research of tooth pulp. Teeth, which have no changes in hard tissues and pulp, react to a heat factor above $+50^{\circ}\text{C}$, to a cold below $+10^{\circ}\text{C}$. In case of pulpitis, irrigation of the tooth with hot water $+50^{\circ}\text{C}$, sometimes lower, or applying a tampon to the tooth, soaked in hot water, causes sharp pain, which does not go away for a long time, and with deep caries, the pain goes away quickly. Teeth react to cold and heat after preparation, when the necks are exposed, wedge-shaped defects.

To determine the reaction of the tooth will use special instrument — thermodontochronometer. By using device given temperature influence it turns out on half a plot of tooth sensor device enables receive temperature from 0 to $+70^{\circ}\text{C}$ and smoothly regulate. Instrument fixes the time of occurrence of the corresponding reaction.

Diagnostic is one of the most difficult sections of clinical medicine in general and orthopedic dentistry in particular. Correct diagnosis is possible if the results of various studies are obtained, which confirm the probability of symptoms, if there is a clear presentation about etiology, pathogenesis of disease, clinic and pathological anatomy.

Doctor at certain sequence collects individual facts (symptoms), analyzes them, in order to carry out a synthesis of the collected facts.

Having received the results of various studies confirming the likelihood of symptoms, they are compared with the symptoms of known diseases and put forward an assumption (hypothesis) or several hypotheses. There can be several working hypotheses when making a diagnosis. All of them, especially in complex clinical

cases, should be carefully checked so that they do not allow medical errors: diagnosis of one disease instead of another; diagnosis of one disease, while the patient suffers by several diseases, diagnosis of complications of the main disease without defining this main disease, diagnosis of complications as the main disease, and the main thing is interpreted as a complication.

Hypothesis testing is a must suggests conducting differential diagnosis.

Thus, the diagnosis should be formulated so that, first of all, the cause of the disease is characterized, i.e. etiology and pathogenesis, secondly, to give presentation about the patho-anatomical basis of the disease, its localization; in the third indicate the degree and nature of functional disorders, and the fourth, clarify the specific flow and form of the disease.

Medical history. Medical history or outpatient card of the patient is a mandatory official and medical document, which data of the examination, diagnosis, orthopedic treatment plan and its implementation are entered. All data must be recorded consistently and completely so that not only fills the medical history, but also another doctor can form a complete picture of the patient, the validity of the chosen method of prosthetics and its result. To a young person who is just starting his practice to the doctor, it is not superfluous to remember that this document, reflecting the dynamics of development of diseases, the method of treatment and its result at the same time is a certificate of medical maturity, which testifies to the level of clinical thinking of the doctor, his capacity for work.

The medical history should be completed in such a way that it can be carried out in succession of treatment. In other words, another doctor who will continue to treat the patient, going out from the records, must clearly imagine the clinical picture that existed before the treatment, the validity of the diagnosis and the method of treatment.

Medical history in some cases can play the role of a legal document, therefore recording in it should differ in clarity and is brought in sufficient volumes.

5.1. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

5.2. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

5.3. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

6. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

- Determination of mobility and flexibility of the mucous membrane.
- Diagnosis. Plan and objectives of orthopedic treatment.
- Restoration of occlusion with various types of prosthetics

7. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka. - K.: Medical Center "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>

- National Scientific Medical Library of Ukraine <http://library.gov.ua/>

- National Library of Ukraine named after V.I. Vernadskyi <http://www.nbu.gov.ua/>

Practical lesson No. 3

Topic: Volume and types of preparation of the oral cavity before orthopedic intervention. Drawing up a treatment plan.

Goal:

1. Familiarize students with basic medical documentation
2. History collection.
3. External examination of the patient
4. Instrumental examination of oral cavity organs
5. Preparation of the oral cavity before orthopedic intervention

Basic concepts: examination of a dental patient, dental instruments for examination, x-ray diagnostics, therapeutic intervention, surgical intervention.

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.

Be able:

— determine the relationship between the upper and lower jaws;

— to examine the patient

— read x-rays

— own a treatment plan

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

— History and clinical examination.

— Main complaints.

— Dental history.

— Medical history.

— Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).

— Examination of the temporomandibular joint.

— Examination of the masticatory muscles.

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting

laboratory research, etc.):

3.1. content of tasks (tasks, clinical situations, etc.);

Examination of the patient aims not only to establish the nature and degree of anatomical changes, but also to clarify the state and function of the organ. Since the functional and morphological changes are interconnected and constitute the essence of the disease, the treatment carried out after the examination should be aimed both at the normalization of the function and at the elimination of anatomical disorders. Examination of the patient includes clinical and paraclinical examination methods.

Clinical ones include: 1. survey, which includes: 1) patient complaints; 2) the patient's life history; 3) history of this disease; 4) family history. II. 1. external examination of the person: TMJ examination; examination of masticatory muscles; 2. examination of the oral cavity, consisting of: a) examination of the vestibule of the oral cavity; b) the oral cavity itself, which includes: examination of each tooth separately; study of dental rows as a whole; examination of the mucous membrane of

the oral cavity; research of bone formations and alveolar processes; periodontal examination. The paraclinical methods of studying the dental and jaw apparatus include: determination of masticatory pressure, chewing samples, study of diagnostic models, occlusiogram, X-ray studies, graphic records of movements of the lower jaw and muscle biocurrents, rheography, etc.

Examination of the patient (anamnesis). The survey begins with checking the filling in of the passport part of the medical history in the registry (last name, first name, patronymic of the patient, age, gender, profession, address).

1. Complaints.

When clarifying complaints, the doctor must listen to the patient, if necessary clarify the details that interest the doctor and, based on the information received, detail the complaints and highlight the main ones. Only after that, the obtained data are entered into the outpatient medical history. Complaints that patients can present at an appointment with an orthopedist can be diverse. Namely: most often, patients complain of the absence of teeth, the inability to chew food fully or with difficulty, impaired diction (or speech function), injury to the mucous membrane in the area of missing teeth, sagging lips and cheeks and, as a result, a change in the appearance of the person (he acquires senile type), biting of the cheeks or lips, the appearance of cracks in the corners of the mouth due to the absence of teeth and a decrease in the height of the bite, impaired aesthetics (unsatisfactory tooth shape - Fousignier, Getchitson, Pfluger teeth), tooth discoloration (due to the treatment of complications of caries, non-carious lesions of hard tissues teeth, such as fluorosis, enamel hypoplasia, pathological attrition, wedge-shaped defect, necrosis, imperfect enamelenogenesis and dentinogenesis).

There may also be complaints about frequently falling fillings, damage to the interdental papilla, mobility of teeth of varying degrees. Patients who previously received treatment from an orthopedist-dentist may have complaints about a fracture of the prosthesis base, breakage of the clasp, lack of fixation of the prosthesis, a fracture of the bridge prosthesis, the presence of damage in the artificial crown, as well as a reduction in its length, the presence of inflammatory processes in the area of the edge of artificial crowns or in the area of the washing part of the bridge-shaped prosthesis. In addition, there are often complaints of pain, burning, redness, tingling of a diffuse nature when using removable prostheses. Widespread complaints of pain, tinnitus, hearing loss, crunching, clicking in the temporomandibular joint (TMJ), pain when opening or closing the mouth, swelling in the joint, headache, dry mouth, burning of the tongue and mucous membrane the lining of the oral cavity (changes in the joint are associated with a decrease in the height of the bite and a violation of the harmony of articulation, in connection with the deformation of the tooth rows, irrational or poor-quality prosthetics, the presence of diseases of the mucous membrane of the oral cavity, etc.).

2. History of the patient's life.

It includes finding out the place of birth and place of residence of the patient (the so-called marginal pathology is important, for example, the fluoride content in the water); working conditions in production (professional diseases), nutrition. If it is a man, it is clarified whether he served in the army and where (in which district and

in which branches of the army). If it's a woman, they find out if she gave birth and, if so, how many births there were, as well as whether there were abortions. The questioning also includes clarification of general well-being, transferred, concomitant and hereditary diseases: 1. General systemic diseases that can cause complications at the stages of orthopedic treatment (cardiovascular: angina pectoris, previously experienced myocardial infarction, hypertension, diseases of the endocrine system: diabetes diabetes, thyrotoxicosis, diseases of the nervous system: epilepsy: diseases of the blood and gastrointestinal tract).

Diseases that pose a danger to staff and others (Botkin's disease, syphilis, gonorrhea, AIDS, open form of tuberculosis). 3. Hereditary diseases (macrognathia, micrognathia, hemophilia); infectious diseases (rheumatism, rheumatoid arthritis, in which TMJ lesions are observed in combination with dentition deformations). 4. The presence of such diseases as rheumatoid polyarthritis, pyelonephritis, glomerulonephritis, phenomena of chronic intoxications of unknown etiology (this requires a careful assessment of the state of periapical tissues or teeth and their roots). It should also be clarified whether the patient is registered with a dispensary, has a disability, and which group. What bad habits does he have (smoking, alcohol abuse, etc.)

3. History of this disease.

If the patient has not previously sought orthopedic help, he is asked when he last had his teeth treated, and for what reason; if there are extracted teeth - when were they extracted, for how long, for what reason (the reasons can be trauma, due to complications of caries, periodontitis or periodontosis, finding a tooth at the site of a fracture), how long did the hole heal after removal and what did not apply for orthopedic help. They specify what other operations were performed in the oral cavity and when. If the patient previously applied for orthopedic help, then they find out when it was, how successfully he used prostheses, how long he got used to them, and if he did not use them, then for what reason. If the prosthesis is broken, find out the reasons and time of the prosthesis failure.

4. Family history.

In connection with the existence of hereditary diseases with anomalies of the masticatory and speech apparatus, one should be interested in the presence of anomalies in close relatives (lower macrognathia, deep bite, open bite, etc.).

"Main complaints of an orthopedic patient with general symptoms":

- Complaints: Difficulty chewing food; impaired speech function; aesthetic defect; asymmetry of the face, deformation of its area; painful sensations in the area of the teeth, pathological mobility of the teeth, the presence of gingivitis and pathological tooth-gum pockets; burning sensation of the mucous membrane of the cheeks, tongue, hard and soft palate; pain in the area of the temporomandibular joint, worn teeth.

- General symptomatology of diseases of the maxillofacial system: the patient has defects of the dentition or the crown part of the tooth, developmental anomaly, temporomandibular joint disease, dentomandibular deformities, complete absence of teeth, presence of defects of the dentition in the front part, anomalies of the

development of the upper jaw that cause incomplete scars in the area of the oral cavity (microstoma), periodontal tissue diseases, localized or generalized form, jaw deformities, intolerance of basic materials, stomatitis of various etiologies, glossalgia and other diseases of the mucous membrane, arthritis, arthrosis, dysfunction of the temporomandibular joint, in one or another moderately worn teeth.

Traumatic occlusion is a unidirectional and prolonged chewing pressure that occurs during normal chewing. A direct traumatic node is characterized by a decompensated ratio of damage to the maxillofacial system. According to the number of traumatic nodes, they are distinguished: 1 / single; 2 / multiple. According to the mechanism of occurrence of traumatic nodes, they are divided into: 1 / primary (occur against the background of healthy periodontium, as a result of improper prosthetics, partial loss of teeth, anomalies of bite); 2 / secondary (arising against the background of damaged periodontal tissues - periodontitis, periodontitis). In the pathogenesis of traumatic occlusion, functional overload is distinguished by the magnitude, direction and duration of action. In the case of primary traumatic occlusion, accompanied by functional overload in magnitude, there is an increase in the height of the bite, for example, on a single crown, filling or bridge-like prosthesis. At first, it causes a feeling of discomfort, but over time, pathological mobility of the tooth, marginal gingivitis, and later, dystrophy of the socket, which is revealed by radiography of the alveolar process, are revealed. Primary traumatic occlusion leads to the development of a complex clinical picture, which can be called primary traumatic syndrome. It is characterized by the presence of two symptoms: traumatic occlusion and periodontal dystrophy. Thus, the traumatic syndrome is a complex concept that reflects a violation of both the function and the structure of the organ. It is characterized by: pathological mobility of the tooth, exposure of its root, marginal gingivitis, atrophy of the socket, which is detected radiologically, secondary movement of the tooth. An example of a traumatic occlusion with a functional stimulus in the direction is a bridge-like prosthesis with support on canines and on the second molar. A bridge-like prosthesis, combining these two teeth, forms a rigid linear system with a fixed anterior and a movable distal support. There is a functional load on the canine, which subsequently leads to its mobility. Bruxism is a clinical phenomenon in which functional stress due to excessive duration and magnitude of functional stress is unavoidable.

Typical signs of primary traumatic occlusion: increased localized abrasion of hard tooth tissues; change in the position of the tooth (secondary displacement); change in the marginal periodontium with the formation of a pathological gingival pocket, exposure of the necks of the teeth, with their hyperesthesia; atrophy of the alveolar process; pathological mobility of teeth; decrease in bite height; arthropathy

X-ray signs of traumatic occlusion: expansion of the periodontal gap; hypercementosis; densification of alveolar bone tissue; rarefaction of bone tissue and the apical part of the hole (false granulomas); root resorption; atrophy of the hole; resorption of the compact plate of the hole. In the development of functional overload, two phases are distinguished - compensation and decompensation. In the first phase, the functional overstrain is compensated by adaptive reactions of the periodontium (tissue changes in the periodontium, alveolar spongiosis, immersion of

the tooth in the socket, its inclinations and rotations around the axis, however, the tooth retains its immobility, no clinical pathology of the periodontium is detected, erosion of the tooth humps).

The phenomenon of compensation and the duration of this phase depends on the state of the periodontium, its training, transferred general and local diseases, as well as hereditary factors. The decompensation phase is the phase in which the functional overstrain is NOT equalized by the adaptive reactions of the periodontium, blood circulation in the periodontium is disturbed and then dystrophy occurs. Teeth in the focus of traumatic occlusion become mobile, gingivitis develops, the necks of the teeth are exposed, hyperesthesia appears. In secondary traumatic syndrome, which occurs as a complex of symptoms in secondary traumatic occlusion. It emphasizes the delay in abrasion of the hard tissues of the teeth, the presence of wedge-shaped defects characteristic of periodontosis, the expansion of interdental spaces, the formation of pathological gingival pockets with purulent secretions. Appearing in the initial stages of the disease, the damage to periodontal tissues is systemic. Horizontal or vertical atrophy of the alveoli can be detected on the X-ray, resorption of the alveoli is observed along its entire length from the alveolar ridge to the apex of the root and is accompanied by a general illumination of the bone structure. There is a symmetrical expansion of the periodontal gap in the cervical area.

Topographically divided: frontal, sagittal, fronto-sagittal, parasagittal, transverse. The functional center is formed in the largest group of opposing pairs of teeth with a well-preserved periodontium. Its occurrence is caused by the appearance of a conditioned reflex, which is based on the presence of an irritant (inflammation, loss of teeth) in other areas of the dentition. Complications with a direct traumatic node: inflammation in the gingival margin, development of pathological gingival and bone pockets, the appearance of serous or purulent contents in the gingival pockets, melting of the alveolus, the occurrence of pathological tooth mobility, in severe cases - abscesses, periostitis and osteomyelitis of the jaws. The displayed traumatic node is a pathological condition of the maxillofacial system, when changes in the location of the front teeth, destruction of the hard tissues of the teeth and the periodontium are caused by the changes that occurred in both groups of chewing teeth. It is formed in intact tooth rows and when their integrity is violated. It should be noted that all classifications have disadvantages and positive sides. Any classification facilitates the study of the clinic of partial tooth loss, shortens records in the medical history and, finally, helps mutual understanding between doctors. But no classification gives precise instructions for the use of this or that prosthesis, as it is unable to fully reflect the complex clinical picture of partial tooth loss, the type of bite, the state of hard tissues and periodontium.

Preliminary and final diagnosis.

The most frequently used additional methods are Electroodontometry and X-ray examination. For electroodontology, a device from a universal dental unit (qualitative reaction) or a special device for determining the electrical excitation of a tooth in microamperes (according to L.R. Rubinov) is used. During the study, the minimum threshold force of irritation of the nerve receptors of the tooth pulp is determined. It has been established that the pulp of intact teeth or teeth with medium caries reacts to

currents from 1 to 20 μA . Numerical values depend on the group affiliation of the tooth. With deep caries, the numbers increase by 10-20 units. A reaction to a current above 50-60 μA indicates necrosis of the crown pulp, and figures from 100 μA and more indicate the death of the entire pulp and the development of apical periodontitis. A comparative check of the electrical excitability of the examined tooth and the neighboring tooth or an intact tooth of the opposite side is recommended. The pulp does not react to electric current after injection anesthesia or rubbing anesthetic substances (sodium fluoride, strontium chloride, etc.). The conductor of the current can be moist gangrenous decay of the tooth pulp. If the electrodiagnosis showed a decrease in the excitability threshold of the pulp during the examination of the abutment teeth for permanent prosthetics, then radiography is used to clarify the diagnosis (chronic periodontitis). The main method of radiological research used in dental practice is radiography.

Radiography is used much less often, mainly for the purpose of determining the localization of foreign bodies, sometimes with traumatic injuries. Anatomical features of the maxillofacial area (structure of the jaws, close arrangement of teeth in curved alveolar processes, presence of multi-rooted teeth) determine the requirements for radiographs. Depending on the relationship between the film and the research object, intraoral radiographs (the film is inserted into the oral cavity) and extraoral (the film is placed outside) are distinguished. The clearest structure of the teeth and surrounding tissues is obtained on intraoral contact radiographs. X-ray examination methods are divided into basic (intraoral and extraoral X-ray) and additional (tomography, panoramic tomo- and X-ray, computer tomography, etc.). Radiography allows to detect the presence of cysts, granulomas and retinized teeth. It makes it possible to diagnose benign and malignant tumors, traumatic injuries of teeth and jaws, the presence of foreign bodies in the maxillofacial area. With the help of radiography, it is possible to clarify the diagnosis of apical or marginal periodontal disease, to differentiate chronic periodontitis (fibrous, granulomatous, granulating; to establish the presence of osteomyelitis and other bone tissue disorders; to diagnose periodontitis and periodontitis, and its stage depending on the degree of resorption of the walls of the tooth socket and alveolar process) .

Radiography facilitates the diagnosis of functional overload of certain groups of teeth due to traumatic articulation or improper design of dental prostheses. Radiography allows to determine the severity of the process in periodontal diseases, the degree and nature of alveolar resorption (horizontal, vertical, funnel-shaped resorption, the presence of bone pockets), to establish the need for surgical or orthopedic treatment - with the help of splints and prostheses. This method makes it easier to choose the design of the orthopedic apparatus (removable, fixed) and supporting teeth. Intraoral radiography in the bite is performed in those cases when it is impossible to obtain intraoral contact images (increased gag reflex in children), when it is necessary to study large parts of the alveolar process, to assess the condition of the buccal and lingual cortical plates of the lower jaw and the floor of the mouth. This type of X-ray is used to examine all teeth and all parts of the upper jaw, front teeth, front and side parts of the lower jaw. Intraoral radiography is used when it is necessary to evaluate the departments of the upper and lower jaws,

temporomandibular joints, and facial bones, the images of which cannot be obtained on intraoral images or are only partially visible. On extraoral images, the image of the teeth and their surrounding formations is less structured. Therefore, such images are obtained only in those cases when it is not possible to take intraoral X-ray images.

Tomography is a layer-by-layer study, an additional method allows you to get an image of a certain layer of the research area, avoiding superposition shadows that complicate the interpretation of radiographs. Special tomographic devices or tomographic attachments are used. With the help of tomography, you can get an X-ray image of a certain layer of the bone at the required depth. This method is especially valuable for studying various pathologies of the temporomandibular joint, the lower jaw in part of its corners (due to its trauma, tumor, etc.). Tomograms can be obtained in three projections: sagittal, frontal and axial. Photographs are taken in layers with a "step" of 0.5-1 cm. Tomography is mainly used to clarify the pathology of the upper jaw and temporomandibular joint. The method makes it possible to assess the relationship of the pathological process with the maxillary sinus, the floor of the nasal cavity, the pterygoid-palatine and subtemporal pits, the condition of the walls of the maxillary sinus, cells of the lattice labyrinth, and to detail the structure of pathological formations.

To study the temporomandibular joint, lateral tomograms are performed in the position with the mouth open and closed. When performing an enlarged panoramic X-ray, the anode of a sharp-focus tube is inserted into the patient's mouth, and the X-ray film in a polyethylene cassette with enlarged screens is placed outside. With this method, you can get a complete picture of everyone in the form of a panoramic picture with great sharpness and a 2-fold increase, and in comparison with ordinary pictures, the exposure of the patient is 2.5 times less. Panoramic radiography - makes it possible to simultaneously obtain an image of all teeth and bone tissue of the upper and lower jaws on an X-ray film. Electroradiography - the basis of the method is the removal of an electrostatic charge from the surface of a plate covered with selenium, followed by the sprinkling of colored powder and the transfer of the image to paper.

Teleradiological examination in dental practice - examination at a long focal length, which ensures maximum distortion of the dimensions of the examined organ. The pictures obtained in this way are used to carry out complex anthropometric measurements, which allow to assess the relationship of different parts of the facial skull in normal and pathological conditions. The technique is used in the diagnosis of various anomalies of the bite and evaluation of the effectiveness of the performed orthodontic operations. Computed tomography - the method allows you to detect the position, shape, size and structure of various organs, to determine their topographical and anatomical relationships with nearby organs and tissues. The basis of the method is the mathematical reconstruction of the X-ray image. After X-rays pass through the patient's body, they are registered by sensitive detectors. Signals from the detector enter the computer, which processes the received information according to a specific program. As a result, a synthetic image of the studied area is played on the screen of the television device. The method expands diagnostic possibilities in the recognition of traumatic injuries, inflammatory and tumor diseases, primarily of the upper jaw. The cartilaginous disk of the temporomandibular joint can be seen on the CT scan,

especially when it is shifted forward. Stereoradiography - allows you to get an idea of the spatial location of dislocated teeth, foreign bodies located in the maxillofacial area.

Magnetic resonance imaging. It is based on the property of some atomic nuclei to absorb energy in the radio frequency range when located in a magnetic field, and to emit this energy when returning to the initial state. This method allows obtaining tomograms with a higher resolution than conventional or computer tomograms. Radiovisiography is an x-ray examination method using an analog form of image acquisition. Radiovisiograph is a set of equipment based on a personal computer, consisting of several modules combined into a single functional system. The X-ray image is read by an electronic sensor with high sensitivity to X-rays. Then the image from the matrix is transmitted to the computer via the fiber-optic system, processed in it and displayed on the monitor screen. During the processing of the digitized image, its size can be increased, contrast can be increased, polarity can be changed, and color correction can be performed. From the monitor screen, the image can be transferred to paper using the printer included in the equipment complex. The sensitivity of the radiovisiograph sensor is higher than that of the X-ray film, but the resolution is noticeably lower than that of dental X-ray machines, which affects the quality of the image. Radiovisiograph also allows you to perform the following actions: - print an X-ray image on paper; - create a radiological data bank; - transfer images over the local computer network from other functional units to other media; - obtain a two-dimensional image of the patient's face and oral cavity using a miniature intraoral video camera; - conduct a thorough clinical review of the color video image, both by the doctor and the patient, while manipulating the image, enlarging it, rotating it in the plane, etc. X-ray imaging has a reduced level of ionizing radiation by 90% compared to conventional X-ray techniques. Angiography is a method of contrast x-ray examination of the vascular system of arteries (arteriography) and veins (venography). Electromyography is a method of research of the masticatory and speech apparatus by recording the biopotentials of the masticatory muscles. Fluctuation of the potential that appears in the muscle during any form of motor reaction is one of the most subtle indicators of the functional state of the muscles. Oscillations are registered with a special device - an electromyograph. The functional state of the masticatory muscles is examined during the period of functional rest of the lower jaw, when closing the teeth in front, side, back and central occlusion, when swallowing and during chewing. The analysis of the obtained electromyogram consists in measuring the amplitude of biopotentials, the frequency of oscillations per second, studying the shape of the curve, the relationship of the active rhythm to the period of rest. The magnitude of the amplitude of biopotential oscillations allows us to judge the force of muscle contraction. Rheography is a method of studying pulse fluctuations of blood vessel filling by graphically recording changes in the electrical resistance of tissues. Rheo-periodontography - rheography of periodontal tissues - a graphic record of fluctuations in electrical resistance of periodontal tissues when high-frequency alternating current (40-200 Hz.) passes through it is most often in demand. This method is used in the diagnosis of periodontal pathology, as well as in the evaluation of the effectiveness of treatment. It is carried out using a special device

- a rheograph. The graphic registration of the rheogram has a pulse character, which is related to the activity of the heart. The main elements and parameters of the rheographic curve are evaluated qualitatively and quantitatively. Qualitative assessment consists in a visual description of the main elements of rheoperiodontography. In addition to visual assessment, the tone of periodontal vessels can be determined using numerical indicators calculated by the ratio of amplitudes of resistance fluctuations in different areas of the microcirculatory channel. With the help of the rheographic method, the following practical tasks are solved: - diagnosis of the functional state and structural changes of periodontal vessels; - prognosis of the course of periodontal diseases; - appointment of physiotherapeutic, surgical, orthopedic treatment, based on the state of periodontal vessels; - observation of patients in the process of treatment and evaluation of the effectiveness of various methods and means of therapy; - diagnosis of combined pathology of the periodontium and internal organs. Echoosteometry. Another technique used in functional diagnostics is echoosteometry, based on the measurement of sound permeability of bone tissue, which depends on its density. The time of passage of the ultrasonic pulse along the bones of the lower jaw is registered (the upper jaw is not carried out). Then the formula is calculated: the higher the speed, the denser the bone. Polarography is a method of determining the level of oxygen tension in periodontal tissues. A change in this level with inflammatory and dystrophic changes in the periodontium indicates tissue hypoxia. The main purpose of the method is the diagnosis of tissue hypoxia in periodontal pathology and the selection of means to correct it. With the help of the rheographic method, the following practical tasks are solved: - diagnosis of the functional state and structural changes of periodontal vessels; - prognosis of the course of periodontal diseases; - appointment of physiotherapeutic, surgical, orthopedic treatment, based on the state of periodontal vessels; - observation of patients in the process of treatment and evaluation of the effectiveness of various methods and means of therapy; - diagnosis of combined pathology of the periodontium and internal organs. Echoosteometry. Another technique used in functional diagnostics is echoosteometry, based on the measurement of sound permeability of bone tissue, which depends on its density. The time of passage of the ultrasonic pulse along the bones of the lower jaw is registered (the upper jaw is not carried out). Then the formula is calculated: the higher the speed, the denser the bone. Polarography is a method of determining the level of oxygen tension in periodontal tissues. A change in this level with inflammatory and dystrophic changes in the periodontium indicates tissue hypoxia. The main purpose of the method is the diagnosis of tissue hypoxia in periodontal pathology and the selection of means to correct it. With the help of the rheographic method, the following practical tasks are solved: - diagnosis of the functional state and structural changes of periodontal vessels; - prognosis of the course of periodontal diseases; - appointment of physiotherapeutic, surgical, orthopedic treatment, based on the state of periodontal vessels; - observation of patients in the process of treatment and evaluation of the effectiveness of various methods and means of therapy; - diagnosis of combined pathology of the periodontium and internal organs. Echoosteometry. Another technique used in functional diagnostics is echoosteometry, based on the

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Ultrasound dopplerography is based on the study of blood flow by recording the vibrations of ultrasound when passing it both through the periodontal tissues and through the hard tissues of the tooth. This method measures the linear and volumetric blood flow rate of the tooth pulp. Microcirculation of the tissues of the masticatory apparatus and the state of the vascular bed are also studied using the method of contact capillaroscopy. Fluorescent diagnostics. The method is based on the ability of tissues and their cellular elements to change their natural color under the influence of ultraviolet rays. The OLD-41 device and a microscope equipped with a quartz lamp with a filter made of dark violet glass (Wood's filter) are used to carry out the method. In Wood's rays, the tongue of a healthy person fluoresces from orange to red. Incomplete glow with hypovitaminosis B1. Bright blue glow indicates the presence of areas of leukoplakia. Depriving the eyes of a red flat surface, they give a whitish-yellow glow. Areas of hyperkeratosis of lupus erythematosus - snow-blue glow. Transillumination method. The surface of the tooth is illuminated with a special green light. At the same time, healthy tooth tissues fluoresce with a green reflection, and the affected areas - with gray. However, this method does not give an idea of the severity of damage in the enamel and is quite subjective in the area of fissures. Laser fluorometry. Impulse rays of a light wave of a certain length fall on the tooth and are reflected. This reflection is perceived by special photocells. Determination of the length of the root canal (apex location). The device used is the apex locator. It identifies the apical opening in the moist environment of the root canal. The length of the channel is indicated by a digital indicator accompanied by a sound and light signal. The device cannot be used in deciduous teeth and teeth with unformed root tips. Particular attention should be paid to determining the uniform and simultaneous closing of the tooth rows during central occlusal contact and multiple contacts during occlusal movements of the lower jaw. Detection of individual dental areas, which are the first to come into contact during occlusion, is carried out visually with slow closing of the tooth rows and gradual displacement of the lower jaw from the position of central occlusion to one of the extreme positions of lateral right and left occlusion, as well as to the extreme front position. Accurate data on areas of pressure concentration are established with the help of copy paper or wax plates, while obtaining occlusionograms. In the case of detection of unevenness of contacts, it is possible, based also on other detected symptoms, to establish the source of diseases or one of the pathogenetic factors: periodontitis, periodontosis, diseases of the temporomandibular joint.

Studying diagnostic models - allows you to see the closure of all types of tubercles in the teeth outside the oral cavity. The models are fixed in the apparatus

that reproduces the movements of the lower jaw. It studies all kinds of movements of the lower jaw, which are sometimes difficult to detect in the oral cavity, as well as to determine the features of occlusal relationships, occlusal premature contacts and blocking moments. Such models make it easier to make a diagnosis, develop a treatment plan, and help judge its results. On diagnostic models, you can study the shape of the tooth rows, their deformation, compare the teeth of the same name in the right and left halves of the jaw, the occlusal contacts of the palatal and lingual cusps, the degree of overlap of the lower front teeth with the upper ones, the character of the occlusal curve, the deformation of the occlusal surface of the tooth rows, study the position of the teeth that limit the defect, their displacement and inclination. With their help, it is possible to specify the relief of the surface of the alveolar part (smooth, bumpy), the degree of atrophy (moderate, average, pronounced) and its nature (even, uneven), hypertrophy, deformation after tooth loss or trauma. They make it possible to get an idea of the state of the toothless alveolar part in relation to the similar, but located on the opposite jaw, or natural teeth.

Thus, the examination of diagnostic models is a continuation of the clinical examination of the patient. On the diagnostic models of the jaws, measurements can be taken and the profile of the cross-section of the alveolar ridge in different departments can be drawn with special devices. Transversal, sagittal and vertical deviations are determined on the models of the upper and lower jaw. Measurements are carried out using special compasses. Transversal measurements are based on the premise that the sum of the widths of the four incisors corresponds to a certain width of the dental arch. On the basis of this anthropometric principle, the Pon index was built. Measurements carried out according to Pon are informative when narrowing dental arches. Sagittal deviations of the front teeth are established using average values that show the relationship between the width and length of the dental arch. Karhauz established a certain relationship between the sum of the transverse dimensions of the upper four incisors and the length of the front segment of the upper arch. The sagittal deviation is determined by the ratio of the front teeth and lateral teeth, as well as based on the symmetry of their location in relation to the tuberal plane. Transverse deviations in the front area are determined by random coincidence or divergence of the midline between the central incisors of the upper or lower jaws. Transversal deviations in the lateral areas - from the transverse ratio of the tooth rows of the upper and lower jaws. Vertical deviation in the front section - according to the depth of the incisal overlap, in the lateral sections - based on the position of the upper and lower dental arch in relation to the occlusal plane.

Therapeutic special preparation of the oral cavity for prosthetics.

This type of measures includes: depulping of teeth unaffected by caries, only according to specified indications. In order to solve the question of the expediency and possibility of tooth depulping, the following studies should be conducted:

1. Thoroughly collect the anamnesis and examine the patient in order to detect somatic and dental diseases, in the case of which tooth depulping is contraindicated.
2. To study the diagnostic models of the patient's dentition in the position of central occlusion. The models determine: the amount and type of dentocellular elongation, the nature of the occlusal curve, the relationship of individual teeth to the

mucous membrane of the edentulous cellular process or part of the opposite jaw; the character of the medial and distal movement of the teeth (body, with an inclination); points where lower jaw movements are blocked; the level of tooth shortening or the amount of their movement to normalize occlusal relationships.

3. Carry out an X-ray examination of the jaws and teeth.

4. Electroodontometric research, which is conducted and evaluated together with the results of other research methods. Electroodontal diagnostics allows: to differentiate increased sensitivity of prepared teeth from limited and diffuse pulpitis; draw a conclusion about the condition of the nerve elements of the tooth in case of periodontitis, periodontosis.

Depulping is an extreme measure that should be carried out in the presence of the following indications:

1. If it is necessary to polish a significant layer of hard tissues of the tooth during its preparation for half-crowns, inlays, plastic or porcelain crowns, if a wide cavity of the tooth is determined radiographically.

2. If necessary significant shortening of the tooth crown, which violates the occlusal surface, when there are no indications for an instrumental and surgical method of treatment, and the study of the radiograph of the tooth and diagnostic models indicates the need for its depulping.

3. Before splinting the frontal teeth, in the case of periodontitis, when, after studying the diagnostic models and radiographs, a significant reduction of the clinical crowns of the teeth is shown, which is impossible without their prior shortening, even under anesthesia.

4. In the case of pathological wear of the III degree, when there is a reduction of the crown part of the teeth by $2/3$ or more, which is not compensated by the reconstruction of the cellular process or part, and the tooth cavity and root canals are not completely obliterated on the X-ray, preliminary depulping for the production of one-piece stumps is shown constructions

5. In case of persistent hyperesthesia after tooth preparation, which does not disappear after repeated treatment (electrophoresis with silver) or in case of pulp exposure.

6. Depulping of teeth inclined towards the defect and defined as supports for bridge-like and braced prostheses depends on the magnitude of the inclination.

7. Indications for preliminary depulping of teeth for the purpose of prosthetics are expanded depending on the degree of exposure of their roots.

Teeth covered with ordinary metal stamped crowns are subject to depulping with the following exposure of the roots:

- central incisors of the upper jaw — by 9-10 mm;
- central incisors of the lower jaw - by 7-8 mm;
- lateral incisors of the lower jaw - by 8-9 mm;
- lateral incisors of the upper jaw - by 7-8 mm;
- canines of the upper jaw - by 10-11 mm;
- canines of the lower jaw — by 11 — 12 mm;

the first and second premolars of the upper and lower jaws — by 10 mm.

During the preparation of teeth for crowns, in order to exclude complications from the pulp side, it is necessary to observe safety zones and take into account the thickness of the dentine layer that remained. After preparation, it should be 0.6-0.7 mm on all walls of the cavity. Absolute contraindications to depulping are: — hypertensive disease of the III stage (during a crisis); — myocardial infarction within 6-12 months after its occurrence; — erecting of the jaws (of different nature); — microstomia of various genesis (scars after burns, injuries, etc.); — epileptic status; — mental impairment of the patient (oligophrenia, etc.), which makes contact with him difficult.

Surgical special preparation of the oral cavity for prosthetics.

Actually, surgical preparation consists of a large number of operations, which Wassmund (1931) divides into the following:

- 1) deepening of the oral cavity;
- 2) transfer of the place of attachment of the muscles to the side of the placement of the edges of the prosthesis;
- 3) restoration of the cellular process;
- 4) deepening of the palatine vault;
- 5) removal of the base of the zygomatic process of the upper jaw.

According to Buisson and Solas (1958), all operations are divided into preparatory and corrective.

Each operation has its own tasks and technical features. From this point of view, it is necessary to highlight the following operations:

- 1) removal of single preserved teeth;
- 2) correction of the shape of the cellular process and part;
- 3) plasticity of the cellular processes and parts;
- 4) creation of an artificial cell;
- 5) placement of a metal sub-osseous or other implant;
- 6) preparation of the hard palate;
- 7) elimination of stretch marks and scars on the mucous membrane of the prosthetic bed;
- 8) deepening of the crown and floor of the oral cavity.

Removal of tooth roots.

All the roots of the teeth, with the exception of those that can be used for prosthetics, are subject to removal. In the case of prosthetics, the roots can be used to fix stump inserts, pin teeth and as supports for removable prostheses. Of course, the roots must meet certain requirements: be sufficiently stable, long, protrude above the gums and have healthy periodontium. Root canals must be sealed up to the apical opening. It is difficult to use the roots of lower incisors and molars, which is related to their anatomical features. Tooth extraction in the case of periodontal tissue diseases is carried out after assessing the ratio of the height of the clinical crown and the length of the root. The decision to remove a tooth with a diseased periodontium can be made only on the basis of a thorough analysis clinical picture and radiograph. All teeth with pathological mobility of the III-IV degree are subject to removal.

Exceptions are those cases when there is cell atrophy within the cervical third of the root, and pathological mobility is a consequence of exacerbation of periodontitis

or acute trauma. After elimination of an exacerbation or injury, the tooth may become somewhat stronger, and the issue of its removal must be revisited. In the case of atrophy of cells within the middle third of the root, teeth with mobility of the I and II degrees are preserved. If the atrophy process has captured the middle third of the cell and reached the border of the apical third, it is possible to preserve the tooth only with mobility of the 1st degree in the case of periodontitis, when the inflammatory phenomena are weak. The doctor's tactics regarding teeth with pathological mobility are formed only on the basis of a careful study of the data of the clinical picture and radiography.

Removal of single (last) teeth on the upper and lower jaws.

In connection with the anatomical features of the upper jaw, which contribute to the improvement of the conditions for fixation of the prosthesis (a relatively large area of the prosthetic bed in combination with a pronounced palatal vault and a preserved cellular process, the absence of actively moving soft tissues), the indications for the removal of single teeth have been expanded, which prevent the creation of an edge closing valve. .

Fixation of prostheses due to retaining clasps placed on single teeth is not always reliable - the teeth become mobile over time and are subject to removal. In addition, prostheses break more often in the area of single teeth.

Exception fromof this rule is possible, if a canine is preserved in the oral cavity on one side of the upper jaw, and on the other - a well-defined cellular hump, that is, there are two points of anatomical retention. Quite often, indications for tooth extraction were considered only as a way to color the fixation of the prosthesis, without paying attention to the disruption of physiological processes in the oral cavity that followed the extraction. After all, the coming changes led to serious psychological problems in many patients. Preservation of teeth not only improves getting used to the prosthesis, but also serves as a connection of the vascular and nervous systems with the whole body. Removal of the last tooth leads to the disappearance of the sensation of chewing on natural teeth. With the loss of the last tooth, the jaws acquire a new quality, both morphologically and in absolute indications for the preservation of teeth on the upper jaw are poor conditions for fixation of a complete prosthesis: non-union of the hard and soft palate, micrognathia, acquired defects of the hard palate, scars in the area of the transitional fold and prosthetic bed, which interfere with the creation of a locking valve. Relative indications for preserving teeth are uncertainty about the possibility of good fixation of a complete removable prosthesis on the upper jaw, an increased vomiting reflex, and the doctor's uncertainty about the results of prosthetics. In any case, the doctor should weigh the functional value of each tooth before extraction. The relationship to the single (last) tooth on the lower jaw is more gentle. After all, the conditions for fixing a complete removable prosthesis on the lower jaw are more complicated and therefore every tooth, even with the II degree of mobility, can temporarily serve to fix the prosthesis. Most single teeth require special preparation before they can be used for prosthetic purposes. This is due to the lengthening of the extracellular part of the tooth and, accordingly, the shortening of the intracellular part. The method of correction is the shortening of the tooth crown with or without prior depulping.

REMOVAL OF EXOSTOSES

Exostoses are bony formations in the form of protrusions, bumps, spikes, pointed or blunt ridges. The clinical picture in the case of exostoses is poor in symptoms and the doctor learns about their presence during the examination of the oral cavity before removable prosthetics.

The very form of exostoses and their sizes are different. From a clinical point of view, they create the most inconvenience if they are located on the lower lip. Most often, exostoses are the result of tooth extraction and the doctor's mistakes before the treatment was started at this stage, namely, the smoothing of the gingiva was not carried out three cell edges after tooth extraction. Rarely, exostoses are observed in the form of bony formations located on the inner surface of the lower jaw.

Exostoses are usually removed surgically. Exostose removal is carried out through a trapezoidal incision, with the help of which a flap with a wide base is formed at the bottom of the oral cavity. In this case, the flap has a good blood supply.

It should be noted that patients often refuse such operations for various reasons.

Resection of part of the cellular process is performed quite rarely. It is shown when it is so enlarged in the distal part that it comes into contact with the cellular part of the lower jaw. Before the operation, it is necessary to take impressions and determine the scope of surgical intervention on the models. It is also necessary to conduct an X-ray examination to rule out neoplasms. After the wound has healed, orthopedic treatment is started.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

3.4. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka. - K.: Medical Center "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>

- National Scientific Medical Library of Ukraine <http://library.gov.ua/>

- National Library of Ukraine named after V.I. Vernadskyi <http://www.nbuv.gov.ua/>

Practical lesson No. 4

Topic: Principles of comprehensive examination of maxillofacial deformities. Mechanisms of occurrence. Clinical forms. Etiology and pathogenesis of maxillofacial deformities.

Goal:

to be able to plan an examination of a patient with dental and jaw deformities; carry out differential diagnosis of maxillofacial anomalies and deformations. To teach students to diagnose the types of deformations of tooth rows with partial loss of teeth and to carry out their differential diagnosis. To teach the methods of complex treatment and the principles of prevention of deformations of dental rows depending on the clinical forms. Familiarize with the structural features of used dental prostheses and master their manufacture.

Basic concepts: examination of a dental patient, dental instruments for examination, X-ray diagnostics, TMJ, deformation,

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform

practical classes (knowledge requirements, list of didactic units);

Know:

- structure of the upper jaw;
- structure of the lower jaw;
- structure of the temporomandibular joint;
- the structure of the mucous membrane of the oral cavity.

Be able:

- determine the relationship between the upper and lower jaws;
- to examine the patient
- read x-rays
- Carry out differential diagnosis of dento-jaw anomalies and deformations
- To determine the etiological and pathogenetic factors of dento-jaw deformations

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

- History and clinical examination.
- Main complaints.
- Dental history.
- Methods of treatment of dentition deformations
- Medical history.
- Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
- Examination of the temporomandibular joint.
- Examination of the masticatory muscles.

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1 Content of tasks (tasks, clinical situations, etc.);

It should be noted that, despite a thorough study of the etiopathogenesis of deformations, in some cases the efforts of doctors turn out to be futile. This is explained by the fact that establishing the relationship between the main causal factors and the deformation caused by them is a difficult task. The difficulties lie in the fact that the action of the same factors on the growth and development of the chewing apparatus at different ages and with different general conditions of the body can cause different deformations. So, it is possible to meet deformations of the same type in terms of their morphological and functional characteristics, which arose as a result of the action of different causes, and, conversely, one factor can cause different forms of deformations.

History data are often unsatisfactory, incomplete, because parents may not notice or forget this or that moment, which is directly related to the etiopathogenesis of the deformity. Elucidation of etiopathogenesis is also complicated by the fact that

there may be several reasons that caused the deformation, and each of them manifests its effect only in one direction, in different periods of time. In these cases, the clinic comes to the doctor's aid. The combination of carefully collected anamnesis with an in-depth study of the clinical picture of the deformity allows with a certain probability to consider certain factors as the cause of this deformity. When studying the medical histories of 500 patients, it was established that both 5 external and internal factors are involved in the occurrence of deformities and that each of them does not act in isolation, but together and in various combinations.

However, one of these factors, due to its prevalence, long-term effect or side effects caused by it, plays the most important, basic role, and therefore is the leading factor in this disease. Classification of dento-maxillofacial system deformation. Numerous etiopathogenetic factors in combination with individual characteristics of the organism are the cause of various forms and variants of dento-maxillary deformations. The systematization of these various forms is necessary, as it facilitates the correct diagnosis and the choice of the method of therapy. Attempts to systematize various forms of pathology and separate them into separate nosological units were observed already at the early stages of the emergence and development of orthodontics. From this it is clear that up to now there are a large number of classifications of anomalies of the dento-maxillary system and methods of their diagnosis. The first attempts to classify deformations date back to the beginning of the 19th century. These classifications are based on the principle of determining the correct or incorrect position of individual teeth. The nature of these classifications reflects the therapy methods inherent at that time, which were limited only to the treatment of anomalies in the position of individual teeth (classifications by Kneisel, Tommy, Linderer, Lomnytsia, etc. - cited by I. L. Zlotnyk).

Then classifications of bite anomalies appeared, which are based only on the study of the ratios of the frontal areas of the dental arches (Sternfeld and Valker classifications - cited by Zlotnik). The development of orthodontics, the accumulation of clinical data on etiopathogenesis, and the study of various variants of deformations of the maxillofacial system prompted subsequent authors to pay attention not only to the ratio of the dental arches in the frontal area, but also to the articulation of the lateral teeth, to their relationship in normal and pathological occlusion. An example of such a classification can be Engel's classification. Although this classification is not without its shortcomings, which we will discuss below, we will give it in detail because it is sometimes used in our time. Engel classifies deformations of the dento-maxillary system depending on the mesiodistal ratio of the first permanent molars of both jaws. He called the first upper molar the *punctum fixum*, and the ratio of the molars was the key to occlusion.

Classifications of dento-jaw anomalies.

Engel's classification (morphological) is based on the mesiodistal ratio of the tooth rows. The author believed that the position of the tooth rows is determined by the ratio of the first permanent molars - "the key to occlusion". According to Engle, the upper first permanent molar should be the stable point from which all anomalies of bite or occlusion (according to Engle's definition) should be determined. On the

basis of the molar ratio symptom, Engle divided bite anomalies into three main classes:

The first class is determined by such mesiodistal ratios of the first permanent molars, in which the mesial-buccal cusp of the first molar of the upper jaw is located in the intercuspal fissure of the first molar 6 of the lower jaw. According to the author, with this type of anomalies, the pathology is concentrated in the front parts of the tooth rows and manifests itself in the form of their close or incorrect position (dystopia).

In the second class, the mesial-buccal tubercle of the first molar of the upper jaw is located in front of the intertuberos groove of the first molar of the lower jaw. Engel divides this class into two subclasses. The first subclass is characterized by protrusion of the front upper teeth. In such patients, Engel noted the distal position of the chin and the mouth type of breathing. In the second subclass, retrusion of the upper front teeth is noted.

With the third class, the mesial-buccal tubercle of the first molar of the upper jaw is behind the intertuberos groove of the first molar of the lower jaw. In most cases, the lower front teeth are in front of the upper ones. Angle's classification cannot be recognized as universal, it has a number of disadvantages: 1. Bite anomalies are determined only in one plane - sagittal 2. The position of the first upper permanent molar cannot be stable, as it depends on the position of the temporary molars. 3. Does not classify anomalies in the milk bite 4. Difficulties in determining the diagnosis in case of early removal of the first molars 5. Does not take into account functional and aesthetic disorders But given its simplicity and originality, Engle's classification has been alive for a whole century. L.V. In 1967, Ilyina Markosyan proposed a classification of bite anomalies in three mutually perpendicular directions, based on the presence or absence of displacements of the lower jaw during "normal" occlusion. She also highlighted combined anomalies. The functional characteristics of dento-maxillary anomalies were supplemented by the author with the sign of displacement of the lower jaw, which is important for diagnosis, selection of treatment methods, and determination of their prognosis.

In 1956, A.I. Betelman deepened the concept of "norm" in the maxillofacial area. In the proposed morphological classification of types of bite, he recommended taking into account the fullness of the function and distinguishing between physiological and pathological types of bite. Based on the study of the symptom complex of sagittal anomalies of the bite, he identified their clinical forms, which made it possible to differentiate the pathology. In the sagittal plane: Distal bite: 1. Lower micrognathia 2. Upper macrognathia 3. Lower micrognathia and upper macrognathia 4. Maxillary prognathia with compression in the lateral areas Mesial bite: 1. Lower macrognathia 7 2. Upper micrognathia 3. Lower macrognathia and upper micrognathia In the vertical plane: 1. Open bite 2. Deep bite In the transverse plane: 1. Unilateral oblique 2. Bilateral oblique

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

3.4. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka. - K.: Medical Center "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>

- National Scientific Medical Library of Ukraine <http://library.gov.ua/>

- National Library of Ukraine named after V.I. Vernadskyi <http://www.nbu.gov.ua/>

Practical lesson No. 5

Topic: Drawing up a treatment plan for patients with maxillofacial deformities. Prevention.

Goal:

to be able to plan an examination of a patient with dental and jaw deformities; carry out differential diagnosis of maxillofacial anomalies and deformations. To teach students to diagnose the types of deformations of tooth rows with partial loss of teeth and to carry out their differential diagnosis. To teach the methods of complex treatment and the principles of prevention of deformations of dental rows depending on the clinical forms. Familiarize with the structural features of used dental prostheses and master their manufacture.

Basic concepts: examination of a dental patient, dental instruments for examination, x-ray diagnostics, TMJ, deformation of dental rows, dental prostheses

Equipment: Computer, phantoms, examination instruments, x-rays

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

- structure of the upper jaw;
- structure of the lower jaw;
- structure of the temporomandibular joint;
- the structure of the mucous membrane of the oral cavity.

Be able:

- determine the relationship between the upper and lower jaws;
- to examine the patient
- read x-rays
- Carry out differential diagnosis of dento-jaw anomalies and deformations
- To determine the etiological and pathogenetic factors of dento-jaw deformations

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

- History and clinical examination.
- Main complaints.
- Dental history.
- Methods of treatment of dentition deformations
- Medical history.
- Examination. External overview. The degree of reduction of the lower third of the face, the expression of facial skin folds, the degree of mouth opening (free, difficult).
- Examination of the temporomandibular joint.
- Examination of the masticatory muscles.

3. Formation of professional skills, skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

3.1. Content of tasks (tasks, clinical situations, etc.);

REMOVABLE MECHANICAL ACTION CAPACITIES

The effort to eliminate, at least partially, the above-mentioned disadvantages of non-removable devices contributed to the development, approval and implementation of removable mechanically acting orthodontic devices in practice. This became possible after the invention of methyl methacrylate - the main component of modern plastics. The construction of the plastic base of removable devices is carried out by the method of hot polymerization; by the method of cold polymerization from self-hardening plastic; plastic casting method; by the method of stamping from Plexiglas after it is heated, the so-called pneumovacuum forming. These include plate devices in combination with screws, springs, and vestibular arches. The first removable plate devices for the treatment of malocclusion were proposed after the discovery of vulcanization of rubber (1839). In the 1960s, Kingsley designed a plate with an expanding screw. Nord improved it by offering a screw of his design. Further improvement of Nord's idea belongs to Schwartz.

Apparatus V.S. Kurylenko for moving teeth in the mesiodistal direction. It is a removable plate into which movable and fixed levers made of orthodontic wire with a diameter of 0.6 mm are welded. The movable lever, adhering to the proximal surface near the very neck of the displaced tooth, ensures its movement. The essence of the action of orthodontic devices consists in continuous, intermittent or alternating pressure on the teeth, alveolar processes and jaws with the help of special mechanical devices activated by sliding screws, spring wire, rubber rings, ligatures or efforts of the masticatory and facial muscles (when disconnected bite) or by changing the stereotyped movements of the lower jaw with the help of guiding occlusal and biting platforms, inclined planes and elements that ensure the normalization of facial muscles: labial pelotes, cheek shields, vestibular mantels - flaps for the tongue, etc. The continuously acting force presses on the tooth without a resting phase for a long period and therefore does not allow for the necessary reorganization of the tissue. As a result, hyalinization occurs easily.

If such forces are used, they must be extremely weak. Raytan believes that in most cases it is impossible to avoid the processes of hyalinization, so that further tooth movement occurs after indirect resorption. 8 – Continuously acting forces arise when "opening" or "closing" spiral springs are used. Initially, large forces are quickly reduced due to the short path, so that the resting phase is possible for tissues.

Similarly, when using rubber-elastic materials, when saliva weakens the action of the initially large force shortly after applying the equipment.

– Alternating force occurs with removable plates and functional orthodontic devices. They are characterized by regular periods of rest, because the equipment is not worn for some time during the day. Despite these pauses, bone resorption continues during this time, because the activity of osteoclasts does not stop after the end of the pressure phase. Here it is also necessary to pay attention to the degree of compression or stretching of the spiral spring. There are also orthodontic appliances,

the therapeutic effect of which is based on a directed change in the dynamic balance between the mimic muscles, which continuously acts on the tooth rows in the lingual direction, and the tongue, which opposes this pressure in the vestibular direction. Methods of treatment of dento-jaw anomalies and deformations are very diverse. Their choice depends on the age of the child, the cause of the deformity, the clinical form and severity of the anomaly, the development of the teeth and jaws, as well as the general condition of the child and other factors. All treatment methods are divided into: preventive, hardware, combined (using physiotherapeutic, surgical methods of intensification), surgical, prosthetic. The hardware method is the main method in the treatment of maxillofacial anomalies and deformations, and all other methods are auxiliary. Orthodontics as a science and practice has come a long way, where ups and downs alternated, where progress depended on achievements in biology, medicine, science and technology. The simplest orthodontic treatment methods were known in ancient times. For example, the Roman doctor A. Celsus used the method of finger pressure, which entered the literature under the name "finger massage", to correct the position of permanent teeth that had erupted incorrectly, and also used ligature binding, wide flat strips with holes that were attached were attached to the teeth and with their pressure or traction affected the teeth that stood incorrectly.

For the first time in 1723, Fauchard used metal arches to treat the incorrect position of the teeth, he proposed an expanding arch. In 1728, Fauchard's work was published, which describes the etiology and treatment of the incorrect position of the teeth. Later, Hunter's inclined plane was created (Hunter, 1771). Expansion spring proposed by Coffin (Coffin, 1886). A chin sling and an apparatus for opening the bite were proposed by Delabara.

Bandage ring with a screw - Shanzha.

Rubber traction as a source of power - Tooker.

Orthodontic arch - Evans.

In the second half of the XIX century. Kingsley proposed a plate with a screw and also with an inclined plane. In 1862, Kez and Becker developed a system of intermaxillary traction. In 1887, Engel creates a universal arc apparatus, which was based on the construction of the Evans arc. With the development of science and technology, old devices were improved and new ones were created. Appliance treatment received scientific justification only at the beginning of the 20th century, when Angle, Sanstedt and Oppenheim began to study the morphological changes occurring in the peri-dental tissues during orthodontic treatment. The choice of orthodontic apparatus for the treatment of various maxillofacial anomalies is made taking into account the age of the patient and the severity of the anomaly. It is often necessary to modify the design of one or another device. The same type of anomaly can be treated with several devices, but you should always use the most gentle and effective method. In the period of milk and early alternating bite, mainly removable equipment is shown. With late variable and permanent bite, you can also use fixed devices of mechanical action, especially with sharply expressed anomalies. Some authors note that the type of device used is not as important as its skillful use.

Classification of orthodontic appliances Za. F. Ya. Khoroshilkina, the main designs of orthodontic appliances are classified as follows. According to the principle of action, four groups are distinguished: • functionally active •

functionally guiding •

mechanically acting •

combined action.

By method and place of action:

• monojaw •

single-jaw interjaw action

• double-jaw

• extraoral

• combined.

By type of support:

reciprocal stationary.

By location:

• intraoral - oral (palatal, lingual), vestibular (dental);

• extraoral - main (frontal - occipital, parietal - occipital, combined);

• cervical; •

maxillary (upper lip, lower lip, chin, submaxillary, on the corners of the lower jaw, combined).

According to the method of fixation:

• non-removable

• removable

• combined.

By type of design:

• arc

• capovi

• lamellar

• block

• frame

• elastic.

FUNCTIONALLY ACTING ORTHODONTIC APPLIANCES (PASSIVE)

Orthodontic appliances, the therapeutic effect of which is based on a directed change in the dynamic balance between the mimic muscles, which continuously acts on the tooth rows in the lingual direction, and the tongue, which counteracts this pressure in the vestibular direction, are called functionally acting. One of the main directions of the development of functionally acting devices was the creation of vestibularly located structures to normalize the function of facial muscles. Vestibular plates (Kerbitz, Schochner, Kraus, Mühlemann, Dass, Hintz protect the tooth rows from the pressure of the lips, cheeks, fingers, as well as various objects. They normalize the closing of the lips, the function of breathing and swallowing, and train the circular muscle of the mouth. Appliances with a grid for the tongue, they normalize its position and prevent excessive pressure on the frontal group of teeth. The use of functional appliances is effective in childhood (during the milk period and

at the beginning of the first period of alternating bite), when you can count on the growth of the jaw bones and especially the apical base

FIXED APPARATUS OF FUNCTIONAL-GUIDING ACTION

The Katz crown belongs to the non-removable functionally guiding apparatus. It consists of a metal crown (which is fixed on the incisors of the upper jaw) with an inclined plane of wire loops soldered to its palatal surface, touching the vestibular surface of the teeth of the lower jaw. When closing the tooth rows, the incisors of the upper jaw lean vestibularly, and the lower ones - orally, the alveolar process is partially rebuilt in the vertical direction in the area of the upper and lower front teeth. Katz's crown, as a result of bite separation, has a largely continuous effect, because the muscles when wearing these devices are in constant tension. The speed of tooth movement observed in this case and their long-term mobility indicate that the processes of bone tissue resorption precede the processes of apposition.

A Schwartz cap is a cast or stamped metal or plastic cap with an inclined plane that covers the front group of teeth of the lower jaw. Fixed with cement. It is used for reverse incisor overlap, in variable and permanent bite, if there is space in the dental row for incorrectly located teeth, for deep frontal overlap (otherwise, an open bite may occur). The action of the mouthpiece resembles the action of the Katz guide crown with a wire loop. Some authors recommend that the inclined plane touches not only the palatal surfaces of the front teeth, but also reaches the alveolar process of the upper jaw or is adjacent to it. This, in their opinion, contributes to the movement of the front upper teeth and alveoli of the process to the vestibular side. In such a modification, it is advisable to use the mouth guard in the milk period of the bite. However, previously created non-removable functionally active devices had an element in their design - inclined planes cast or bent from metal plates. Since these devices were permanent, their use often led to complications: injuries, inflammatory diseases of the mucous membrane, teeth, and temporomandibular joints. Therefore, in the clinic they began to be used less and less, and more often - only in experiments on animals.

REMOVABLE APPARATUS OF FUNCTIONAL -GUIDING ACTION

In order to eliminate the harsh effect of fixed appliances on the teeth, they began to be made removable: Schwartz's, Binin's, Schwartz's appliance with a biting platform and an inclined plane, Katz's appliance with a biting platform, etc. The use of the contraction of the masticatory muscles as the main source of energy for moving the teeth made it possible to provide intermaxillary action with single-jaw fixed and removable appliances due to the presence in their design of a passively acting functionally guiding element (inclined plane, naku-suture platform, occlusal overlays, etc.) . Kapa Bynin B.N. with an inclined plane is made of plastic, covers the entire lower tooth row and fits under the upper teeth with an inclined plane. Indications for the use of such a device and the principle of its action are the same as for Schwartz's mouthguards, but it can be used with medium frontal overlap (in this case, the lower front teeth almost do not tilt orally). In the course of treatment, when

the side teeth start to touch the mouth guard, its chewing surfaces are polished, which ensures re-unification of the bite and continuation of the device's action

DEVICES OF MECHANICAL ACTION (ACTIVE)

The devices are characterized by the fact that the power of their action is embedded in the design of the device itself and does not depend on the contractile capacity of the masticatory muscles. The source of force is the active part of the apparatus: the elasticity of the arc, the spring, the elasticity of the rubber traction and ligatures, the force developed by the screw, omega, levers, etc. The intensity of the devices' action is arbitrarily regulated by the doctor using their active part. The applied force of pressure or traction must be individual. To avoid complications, it is advisable to use small forces of action, approaching natural ones, and to activate the devices under the control of dosing devices, ensuring a rest period. Engle's expansive arch is used to expand the dentition. Depending on the area in which it needs to be expanded (in the area of molars or premolars), the arch is set accordingly. To expand the tooth row in the area of the molars, the arch is straightened and by bringing its ends together with tension, it is inserted into the tubes, if it is necessary to expand in the area of the premolars and canines, an arch is used, curved according to the desired shape of the tooth row, and the teeth are pulled to it with ligatures.

Angle's sliding arch is used to tilt the front teeth to the palatal or lingual side. The arch is turned into a slide: the nuts are removed, and medially open hooks are soldered to the bow in the area of the canines. After inserting the arc into the tubes on both sides, rubber rings are put on the hooks and fixed at the rear end of the tube. Rubber traction displaces the arch distally, and in this way there is pressure on the front teeth. In the treatment of vertical anomalies of the bite with the Engle apparatus, they act as follows. To extract the teeth, the arc is placed closer to their cutting edge and pulled with a ligature wire to the necks of the moving teeth. When sinking the teeth, the arch is placed closer to the necks and also tied to the teeth with a wire ligature. In both cases, the arch, due to its elasticity, tends to take the initial position and drags the teeth attached to it with it. Engel's apparatus is also used to align the sagittal ratios of the tooth rows (with progeny, prognathia) by using an oblique intermaxillary rubber traction (the inventor of the oblique intermaxillary rubber traction is considered to be Becker, 1892; Engel perfected his method).

In this case, Angle devices are used simultaneously on the upper and lower jaws. The arches are tightly fixed to the teeth with ligatures; there is a hook on one of them. If the hook is soldered to the arch of the upper jaw in the canine-premolar region, the force of the rubber traction moves the upper tooth row back, and the lower one - to some extent forward. When the hook is placed on the arch of the lower jaw, the reverse action occurs. Ainsworth's apparatus. Crowns or rings are made - more often for the second, less often for the first premolars. Tangent beams of orthodontic wire with a diameter of 0.8-1.2 mm are bent, covering the teeth to be moved from the palatal side in the cervical part. The beams are soldered to the crowns (rings). From the vestibular side, vertical tubes with an inner diameter 0.1-0.2 mm larger than the diameter of the wire from which the arc is bent are soldered to the rings on the premolars. The vestibular elastic arch is bent from an orthodontic wire with a

diameter of 0.8-1.2 mm so that it touches only the front teeth. The arch should be 3-4 mm wider than the dental arch on the labial side. The ends of the arc are bent at a right angle directly or in the form of a hook, inserted into the tubes and shortened according to the dimensions of the vertical tubes. Rings with beams are fixed with cement on the supporting teeth.

The next day, the arc is inserted (with effort) by the ends into the tubes. The elasticity of the arch, which is periodically activated, moves the teeth. If the elastic vestibular arch becomes short during treatment, a new one is bent or an arch with P-shaped compensatory loops near the canines is immediately prepared. Ainsworth's apparatus is used for uneven expansion of the tooth row and elimination of close arrangement of incisors, rotation around the vertical and horizontal axis. The operating lever rotates freely in the base and can be used to move 2 or even 3 teeth, 13 especially if it is necessary to move them in one direction. A retraction bracket, an inclined plane and other elements of removable orthodontic devices can be mounted in the plate, which shortens the period of treatment of anomalies. Currently, removable devices with various arrangement of screws (of a certain size, value and in a certain number) are used according to the area that needs to be expanded or brought out vestibularly. All mechanically operated devices require reliable fixation. Soon the devices appeared: an open Klammt activator, a Bimler bite shaper, a Baiters bionator and their modifications. The Andresen-Goiple apparatus was also repeatedly modified, modifications of this apparatus appeared: Masagu and Kesling, Kurz, P. S. Flis - H. P. Flis.

These devices consist of upper and lower plates connected by base material or wires. Vestibular arch, springs, screw can be added to them. In the plates adjacent to the inner surface of the alveolar processes, there is a bed for the palatal and lingual surfaces of the upper and lower teeth, into which the teeth are placed when closing the jaws. Their ratio is created with the help of wax rollers before the device is manufactured (it is usually recommended to set the lower jaw almost in direct relation to the upper). In the course of treatment, the tooth bed is filed in accordance with the direction of tooth movement. Depending on the clinical picture and the goal of treatment, the tooth rows of both jaws may be disconnected (growth occurs in the vertical direction) or their chewing surfaces touch the biting area. The action of such devices is based on the reduction of chewing and facial muscles and the force of action of mechanical elements. When closing the jaws, the teeth are subjected to a certain load, which stimulates tissue reconstruction. Activators were used mainly at night. Currently, they are recommended to be used during the day (as long as possible), because muscle activity is more pronounced during the day and after meals than at night. Recently, the so-called elastic open Klammt activator has gained recognition. It consists almost entirely of vestibular arches and springs, with the exception of thin palatal plastic plates (1.2 mm thick), which start from the canines and end near the last molar. These plates may or may not have guide surfaces.

If necessary, you can introduce additional wire elements, pellets or modify the vestibular arches. The activity of the device is manifested by movements of the tongue and lower jaw. The author recommends using this device in early childhood and using it all day and night. The disadvantages of activators include their slow

action, which almost excludes the possibility of using activators in young people and adults. In addition, with pronounced anomalies, the desired effect is not always achieved, which makes it necessary to combine activators with other orthodontic devices. 14 Treatment of maxillofacial deformities that occur as a result of periodontal tissue damage. Complications of splinting teeth in patients with periodontitis include: exacerbation of the pathological process, loosening of teeth, removal of teeth during impression taking, painful teeth during their processing, decementing of splints and denture splints. Exacerbation of the pathological process is a complication that sometimes occurs shortly after splinting the teeth of a patient with periodontal disease. This complication can occur when tooth splinting is carried out without taking into account the indications and contraindications for such an intervention, with the wrong choice of the design of the fixing device and the imperfect technique of its manufacture. Indications and contraindications for orthopedic interventions in patients with periodontitis, as already noted above, should be based on clinical examination data and X-ray examinations of the teeth and surrounding tissues. If there is a history of frequent exacerbation of the pathological process with the formation of abscesses, as well as the presence of teeth with III degree of mobility in the mouth, orthopedic interventions are temporarily contraindicated.

They are possible after diligent therapeutic treatment of a patient with periodontitis, removal of teeth with III degree of mobility and other interventions. After this splinting of the teeth should be carried out so that after it no horizontal overloads of the teeth occur. Horizontal overloads can occur if the clinical and laboratory stages of tire manufacturing are not carried out correctly. Clinical errors include insufficient processing of front teeth, and laboratory errors include insufficiently accurate stamping of crowns. As a result of this, an increase in the bite and loosening of the teeth in the anterior-posterior direction is noted.

When splinting the lateral teeth, the chewing surfaces of the crowns, which make up the splint, must articulate correctly with the opposing teeth. Correct articulation between the teeth is especially important when making splints without preparation of chewing teeth. Improper relationship between the tubercles and the lack of smooth sliding between them during the movements of the lower jaw can be the reason for the exacerbation of the pathological process. In this regard, when making splints for prepared teeth, the chewing surfaces of the crowns should be modeled strictly according to the bite. If the tire is made without preparation of the teeth, careful stamping of the chewing surfaces of the crowns is required.

With this stamping, the bite increases only by the thickness of the crown, and its chewing surface does not disturb the smoothness of the intercuspular sliding, due to which horizontal overloading of the teeth is excluded. But even well-made crowns with careless fitting can lead to exacerbation of the pathological process. In this regard, crowns should be fitted carefully, without causing additional injury to the affected tissues. With careless manipulations during putting on or removing crowns, increased mobility of teeth and injury to periodontal tissues are possible. With this in mind, crowns and caps should be fitted so that they fit freely on the teeth and do not interfere with each other. During fitting, the proximal surfaces of crowns and solder

caps should be cleaned. The plaster impression must be obtained so that the caps do not shift and come out with it. Even a slight displacement of the caps makes it difficult or impossible to further fix the tire on the teeth. Forcefully putting a splint on mobile teeth injures the periodontium and can exacerbate the process. Deformation of the tire may occur during its soldering. In this regard, it is better to solder the tire on the model, strengthening it with asbestos. Asbestos fixes the component parts of the tire well and prevents its deformation. You can also deform the tire during its processing. Therefore, the tire should be handled carefully, without applying excessive force. The manufactured splint should be correctly fixed on the teeth to prevent de-cementation. It is known that cement resorption occurs under the influence of moisture that penetrates during or after crown cementation. In this regard, crowns or caps must be made so that they correspond to the dimensions of the teeth and fit tightly to their surfaces. With this fit of crowns and caps to the teeth, the possibility of resorption of the cement under them is insignificant. In addition, cementation of tires should be carried out on well-dried teeth. In practice, quickly evaporating substances are often used to dry teeth: alcohol and ether. These substances, evaporating, cool the tooth, the surface of which is covered with a thin layer of moisture from inhaled air.

The latter resembles a cold mirror covered with the tiniest drops of dew in a warm room. The formed layer of moisture on the teeth and the low quality of the cement can be the reason for decementing tires. Before cementing the tire, it is better to dry the teeth with a stream of warm air. When establishing indications and contraindications for the manufacture of splint prostheses, attention should be paid not only to the degree of loss of chewing efficiency, but also to the beginning of a violation of the physiological balance of the tooth rows. The latter manifests itself in the movement of teeth towards the defect, as well as forward in case of loss of lateral teeth. As a result, in patients with periodontitis, the loss of even one tooth is an absolute indication for prosthetics. In the manufacture of fixed prosthetic splints for their fixation, several teeth should be included, which surround the defect of the dentition. Such fixation of the splint-prosthesis reduces the load on the supporting teeth, and also prevents possible additional loosening of the teeth, tissue injury and exacerbation of the disease. Sometimes, after splinting a group of teeth of one jaw, the mobility of a group of antagonistic teeth is noted. This is a consequence of increased mechanical loads of one group of teeth and weakening of another. Because of that, splinting of antagonistic teeth is also indicated in such patients. 16 Manufacturing prostheses with clasp fixation, as mentioned above, can be accompanied by a number of complications. These primarily include the loosening of supporting teeth and possible trauma to the mucous membrane. With this in mind, the use of plate prostheses with staple fixation should be avoided. However, if they are clinically indicated, prostheses of lightweight designs are made.

In the case of appropriate clinical indications, the most expedient is the manufacture of fixed prostheses with fixing devices and combined clasps, semi-labilely or labilely connected to the prosthesis arch. During the treatment of teeth, some patients experience sharp pain, as a result of which it becomes difficult to make splints. When such sensitivity appears, the teeth should be treated with anesthetic

pastes or liquids. For this purpose, fluoride paste and 4% alcohol extract of propolis are often used in practice. Propolis solution is made as follows: 40-50 g of dry propolis taken from a beehive is poured with 100 g of alcohol. After 3 days, the infusion is filtered and the remaining undissolved propolis is removed from the filter, dried and weighed. Thus, knowing the amount of dissolved propolis, you can get a 4% solution of it by adding the appropriate amount of alcohol. The method of using these drugs is simple and consists in this.

The desired tooth is dried with warm air and covered with cotton balls. Then rub fluoride paste or propolis into the tooth for 3-4 minutes. The paste can be rubbed with a spatula for mixing cement, and propolis can be rinsed with a cotton swab on a rotating dental drill. After rubbing the drug, they start processing the tooth under the splint. When pain appears, the rubbing of the paste or liquid is repeated. It should be noted that currently used pain-relieving pastes and liquids are not always effective, their effect is short-lived and insufficient for treating a tooth. In this regard, attempts to find new, effective painkillers and methods of their use are ongoing. Yes, O.M. Ovcharenko proposed and clinically tested a liquid that can be used to obtain a longer and deeper anesthesia of tooth tissues. This liquid consists of propolis concentrate (10 ml), dicaine (1.5 ml) and dimethyl sulfoxide (10 ml). Its short name is PDD. According to the author, rubbing in the tooth of the liquid of PDD provides pain relief in 91.3% of cases. The method of applying traffic light fluid is usual. In order to prevent the removal of mobile teeth during the preparation of plaster casts, it is necessary to apply appropriate cuts vertically and along the defect of the dentition. However, such incisions often disrupt the clarity of tooth impressions. Because of this, it is recommended to obtain demountable plaster casts consisting of oral and vestibular parts. Such impressions exclude the possibility of additional loosening and accidental removal of teeth. At the same time, clear impressions of the teeth are obtained. 17

DIRECT PROSTHESIS IN PERIODONTOSIS

The most frequent reason for the manufacture of direct prostheses is the removal of teeth affected by periodontal disease. According to our observations, their manufacture in periodontal disease accounts for 60% of the total number of prostheses. Direct or immediate prostheses are prostheses that are made before tooth extraction, and are inserted into the oral cavity immediately after their removal. Prostheses are placed directly on the wound surface.

The most responsible stages in the manufacture of such prostheses are taking impressions in the presence of very mobile teeth in the jaw and processing the alveolar edge around the cut teeth on a plaster model. In the production of partial lamellar direct prostheses, ordinary anatomical impressions are obtained with the help of plaster or alginate masses.

When obtaining an impression with plaster, vertical and longitudinal cuts are used to prevent accidental removal of mobile teeth during removal of the impression from the oral cavity. It is safer to obtain demountable plaster impressions or impressions with alginate masses. For the production of direct full prostheses on the upper jaw, it is necessary to obtain a functionally resorbable impression. Obtaining

such impressions is possible with the help of plaster or plastic masses. An impression with the help of plaster is obtained as follows. A standard spoon is selected according to the size of the jaw, filled with plaster, inserted into the oral cavity and the edges of the impression are carefully processed. After the plaster has hardened, the spoon is separated from the impression and removed from the oral cavity. Then the cast is cut from the labial or buccal surface of the teeth and the impression is carefully removed from the oral cavity. In this way, the oral part of the impression is obtained with an impression of the tissues of the hard palate, alveolar processes in the area of defects of the dentition and the palatal surfaces of the teeth. In order to obtain the vestibular part of the impression, that is, impressions of the labial or buccal surface of the teeth and the edge of the impression from the side of the mouth, the edges of the impression corresponding to the defects of the dentition are cut by 4-5 mm, and in this form it is introduced into the oral cavity. The impression is pressed to the jaw, and the patient is asked to cover his mouth. When the mouth is half-closed, plaster is inserted from the side of the crown and the edges of the impression are processed.

After the plaster hardens, the vestibular and then the oral parts of the impression are carefully separated and removed. As soon as the plaster dries, the parts of the print are wiped with cotton wool, carefully folded and glued. In this way, a functional suction impression is obtained with the help of a standard spoon, which consists of two plaster parts - oral and vestibular. Such an impression is considered to be functionally absorbent, since its edges are formed when the mouth is half open, which corresponds to the state of the mobile mucous membrane during chewing food. In addition, the edges of such an impression are formed 1-1.5 mm higher than the neutral zone, which increases the suction of the prosthesis on the jaw. 18 Obtaining impressions according to the described method is indicated mainly for terminal defects of the dentition of the upper jaw. If there are chewing teeth in the jaw, as well as converging and highly mobile teeth, it is advisable to take impressions using plastic materials (algelast, sielast, tiudent, elastic). Full prostheses for the lower jaw are made based on impressions made with plaster or plastic mass. Based on the impressions obtained, models are made, bite rolls are made, and central occlusion is determined. At the same time, one should not forget about the peculiarities of determining the central occlusion during the manufacture of direct prostheses.

These features are as follows:

a) when taking an impression, a shift (inclination) of movable teeth is often observed, as a result of which the relationship between the teeth and on the manufactured models differs from the corresponding relationship in the oral cavity. Considering this, the determination of the central occlusion during the manufacture of direct prostheses in patients with periodontitis, even if the jaw has three pairs of antagonistic teeth, placed in different parts of it, is mandatory;

b) when making complete prostheses for both jaws, it is necessary to determine the prosthetic, or horizontal, plane. But the remaining teeth prevent the establishment of this plane. Taking this into account, they do as follows: on the ridge of the upper jaw, only part of the prosthetic plane is determined in the area of defects of the dentition.

If the tooth row defect is located in the front part of the jaw, the ridge is cut parallel to the pupil line. If the dentition defect is located in the lateral areas, the ridge is cut parallel to the ear-nasal (camper) line. Then the wax roller on the lower jaw is adjusted until it tightly closes with the roller on the upper jaw. Determining at least a part of the prosthetic plane makes it possible to determine it completely with the help of a glass in the occluder after cutting the teeth on the model. Thus, the determination of the central occlusion in the manufacture of direct prostheses is carried out with the help of wax rollers, regardless of which group the jaws belong to. Other methods of determining central occlusion in the manufacture of such prostheses are unacceptable. If all teeth are present in the jaw, the central occlusion is fixed using the correct alignment of the models of the upper and lower jaws. After determining the central occlusion, they start processing the models, setting the teeth, and finish the manufacture of the prosthesis. O.D. Kumeyska (1949) used the following method of processing models for sharpening teeth in the manufacture of partial plate direct dentures. The teeth to be removed are cut, and the pits of the cut teeth are deepened on the upper jaw by 2-3 mm, on the lower jaw - up to 2 mm. Artificial teeth on the upper jaw are installed so that they do not rest against the outer wall of the alveolus.

The degree of depth of the fossa on the model depends on the patient's age, since the alveoli atrophies more in young people, and less in the elderly. Therefore, when making a prosthesis for young people, the depth of the hole on the model should be greater, and for elderly people it should be smaller. The described method of processing models, according to the author, 19 meets the functional and cosmetic requirements for such prostheses. After inserting the teeth, the production of prostheses is completed without checking their design. A.A. Kotlyar (1958) and other authors recommend making direct prostheses only on artificial gums and in this connection offer appropriate methods of processing the alveolar edge on the model in the area of removed teeth. Their essence is that teeth are cut on the model and the alveolar ridge is given a semicircular shape. At the same time, the condition of the mucous membrane and the degree of bone atrophy of the alveolar process are taken into account. If swollen (hypertrophied) mucosa and sharp bone atrophy are noted around the teeth to be removed, the alveolar process is processed around the cut teeth and from the side of the labial or buccal surface. The thickness of the removed plaster layer is 2-3 mm. However, this processing of the model contributes to the creation of an approximate shape of the alveolar edge, which becomes different after the teeth are removed.

After removal of teeth affected by periodontitis, the alveolar rim is wide, but its height depends on the degree of destructive bone changes caused by the pathological process. If the bony part of the alveolar edge is significantly changed, and the mucous membrane is hypertrophied, then a gap between the surface of the alveolar process and the plate of the prosthesis is formed quite early. The gap is formed after the traumatic edema of the mucous membrane around the extraction wounds disappears. The appearance of such a gap reduces the functional value of prostheses. Prostheses lose stability, are poorly fixed on the jaw, and sometimes break. It is almost impossible to take into account certain changes in the shape of the alveolar edge by removing the plaster layer around the cut teeth on the model. In addition, this

discrepancy does not create a roundness of the edge, which is rational for the next prosthesis. The roundness of the edge during direct prosthetics depends on the degree of cicatricial tightening of the edges of the wound and the density of the prosthesis plate adhering to it. With a tight fit, it is flat and semicircular, and with a loose fit, it is tortuous or bumpy. Placing fast-hardening plastic under the prosthesis improves its fixation on the jaw and tight adhesion to the mucous membrane of the alveolar process. The tight fit of the prosthesis to the mucous membrane of the alveolar process helps to transmit chewing pressure directly to the wound and nearby tissues. Wound healing under such prostheses proceeds normally. The wound surface is clean, without purulent deposits and traces of mechanical irritation. The alveolar process is swarming, takes on a semicircular shape.

Thus, the observational data refute the empirical statements of some authors (A.E. Verlotskyi and A.M. Pevzner, 1950), who deny the effectiveness of direct prosthetics in terms of its impact on the processes of restoration and bone formation of the alveolar process in the area of removed teeth. Observations prove that the early restoration of the function of the masticatory apparatus helps the favorable course of reparative processes in the damaged bone and the formation of an adapted form of the alveolar process under the prosthesis. 20 Clinical observations show that a number of factors should be taken into account when manufacturing direct dental prostheses, primarily the functional state of the tissues of the alveolar process in the area of the teeth to be removed. After the final fabrication of the prosthesis, the patient is offered to remove the teeth and the prosthesis is handed over on the same day.

Immediate delivery of the prosthesis after tooth extraction is important for the following reasons:

1) insertion of the prosthesis into the oral cavity, when the anesthesia has not yet passed, does not cause painful sensations;

2) the prosthesis, closely adhering to the wound, contributes to the rapid stopping of bleeding and the formation of a blood clot; 3) a direct prosthesis reliably protects blood clots in dimples from possible damage from external stimuli, which often prevents postoperative complications and accelerates the healing of bone wounds. Before inserting the prosthesis into the oral cavity, it is necessary to carefully process it. It is washed with a brush and soap for 7-10 minutes, treated with alcohol and iodine tincture. In conclusion, it should be noted that direct prostheses can be permanent or temporary. They are permanent when they remain in the oral cavity to replace defects in the dentition. As temporary, they are used when the defect of the dentition needs to be compensated until the wound heals and the possible manufacture of permanent prosthetic structures. Such prostheses are sometimes used when several front teeth are removed with the subsequent manufacture of bridge prostheses.

At the same time, the following advantages of direct prosthetics are used:

a) early restoration of the function of biting off food and restoration of pronunciation clarity;

b) elimination of mental trauma that occurs in patients who are forced to wait for the frame to heal and the prosthesis to be made;

c) the immediate transition from natural to artificial teeth does not cause the formation of negative emotions, it gives the patient the opportunity to start working in his specialty on the same day. The latter is especially important for persons whose work is connected with the act of speech (artists, teachers, propagandists, etc.);

d) with complete prosthetics, the tone of the masticatory muscles, the correct outline of the lower third of the face is preserved; e) direct prostheses have a beneficial effect on wound healing and the formation of the alveolar process.

Direct prostheses are usually made of AKR-7 or AKR-15 plastics. Early prostheses can be partial or complete.

Partial prostheses are made according to anatomical impressions, and full prostheses are functionally absorbent. At the same time, plaster or plastic masses can be used as an impression material. The choice of impression material depends on the clinical picture of the disease: the condition of the teeth, their stability and placement, the condition of the gums, the extent and topography of defects in the dentition, and other factors. Thus, in the manufacture of partial lamellar early prostheses, plastic impression materials such as alginate masses are most indicated. When manufacturing complete prostheses for the upper jaw, gypsum is used as an impression material. On the lower jaw, you can use thermoplastic masses with the processing of the edges of the impression according to Herbst.

ORTHOPEDIC TREATMENT OF TRAUMATIC OCCLUSION

Orthopedic treatment methods do not eliminate periodontitis and periodontosis, as their goal is traumatic occlusion. Therefore, orthopedic treatment is syndromological in nature. In this regard, the goal of orthopedic treatment for periodontal diseases is the prevention, elimination or weakening of the functional overload of the periodontium, which at a certain stage of the disease is one of the main pathogenetic factors determining the course of the disease, and in some cases an independent periodontal disease (traumatic occlusion). Achieving this goal puts the periodontium in new conditions in which dystrophy or inflammation develop more slowly. Thanks to this, therapeutic measures become more effective.

To fulfill this goal, the following tasks must be solved: - return the lost integrity of the tooth row; transform teeth from elements that act separately into an inseparable whole; - correctly distribute the chewing pressure on the remaining teeth and relieve the teeth with the most affected periodontium at the expense of the teeth in which it is better preserved; - protect the teeth from the traumatic effect of horizontal overload; - perform prosthetics of the oral cavity. The main orthopedic methods of prevention and elimination (or reduction) of functional overload of the periodontium are: - selective grinding of teeth; – orthodontic correction of dentition deformation (fan-shaped arrangement of front teeth); – teeth splinting; - prosthetics of tooth row defects. With deep incisor overlap, deep bite, upper or lower prognathia, retrognathia, macro- and micrognathia, it is recommended to carry out selective grinding mainly in the central, anterior and posterior occlusions. With a crossbite, narrowing of the tooth rows, reverse overlapping of the lateral teeth in the transversal plane, central and lateral occlusion are the preferred positions for registering and eliminating premature

and blocking interdental contacts. Selective grinding is carried out using high-speed drills and centered shaped heads with a diamond coating.

In the case of radical intervention, polishing is preceded by local (application, conduction or infiltration) anesthesia, and if necessary, premedication. The final stage is the treatment of the wound surfaces of the teeth. First, they are polished; secondly, they are impregnated with calcium and fluoride ions using applications or electrophoresis; thirdly, they are covered with a protective varnish. Splinting is aimed at solving the main problems of orthopedic treatment in periodontal diseases. The following requirements are imposed on splints: - creation of a strong block of teeth with restriction of their movement in three directions - vestibuloral, mesiodistal and vertical; - presence of rigidity and strong fixation on the teeth; - no need for radical tooth preparation; - elimination of irritating effects on the marginal periodontium and interference with manipulations in the gum pockets; - lack of blocking of lower jaw movements and phonetic disorders; - exclusion of retention points for food retention and violations of the aesthetics of the patient's appearance. E.I. Gavrilov believed that in order to achieve the therapeutic effect of splinting, the following biomechanical principles must be followed when planning the splinting structure: - limitation of tooth mobility due to the stiffness of the splint, which has a beneficial effect on the periodontium; - relief of the periodontium due to the normalization of the distribution of masticatory pressure; - unloading of the periodontium of the teeth with the greatest damage due to the most resistant teeth; - the splinting structure, located along the arc, is the stiffest due to the arch shape and the mutual intersection of the mobility vectors of the teeth included in the splint; - with a linear arrangement of teeth in the lateral sections, on the right and on the left, they must be connected transversely with the help of an arch prosthesis. The splinting can be temporary or permanent, and the structures - removable and non-removable. Temporary splinting is carried out for the period of therapeutic and surgical treatment to create conditions for the normal functioning of the periodontium.

In addition, it is necessary to find out the prognosis of the existence of individual teeth, for example, before the healing of adjacent post-extraction wounds and to resolve the issue of including these teeth in a permanent splint. Temporary splints are also used to secure the results of orthodontic treatment as retention devices. Among other things, they have a psychotherapeutic effect, eliminating tooth mobility. Temporary splints can be used directly by prostheses after multiple tooth extractions, for which they are supplemented with splinting elements. In temporary splinting, splints that do not require tooth preparation and laboratory creation are usually used, using composite materials, in some cases reinforcing them with a ligature or fiberglass. Permanent splints are used as medical devices for long-term immobilization of movable teeth. The leading factor in determining indications for removal, preservation and inclusion of teeth in a splint is the amount of alveolar atrophy. It is also necessary to take into account the degree of mobility of the teeth, the topography of the defects of the dentition, the design of the future prosthesis or splint, the type of bite, the age and condition of the patient, etc. The presence of teeth of the III degree of pathological mobility is a contraindication for including them in a splint. Teeth with mobility of the II degree are also subject to removal, if resorption

of the alveolar bone exceeds $1/2$ of the length of the tooth root. Teeth with pathological mobility of the first degree and resorption exceeding $2/3$ of the height of the socket are also not preserved.

Teeth with II-degree mobility and chronic periapical foci, even if their canals are well sealed, are not included in the splint. The presence of fistulas is an absolute contraindication for including teeth in a splint. Splinting of teeth with I and II degrees of mobility is considered expedient, while the main rule of splinting is the connection of mobile teeth with stable teeth that have retained reserve forces. When splinting with removable structures, indications for preserving teeth can be slightly extended. It is known that the best splinting result is obtained when the splint unites the teeth, the mobility of which occurs in intersecting planes. For the front teeth, good stability of the splint block is achieved if the splint unites the incisors and canines. Such immobilization is called front. Immobilization (stabilization) of the teeth, in which the tire is placed in the front-back direction, is called lateral.

ETIOLOGY, PATHOGENESIS, CLASSIFICATION OF PARTIAL LOSS OF TEETH, COMPLICATED WITH DEFORMATION OF DENTAL RODS.

The causes of early disorders of the dental and jaw system are the formation of defects in the crowns of individual teeth, which arise as a result of acute and chronic trauma, hypoplasia, fluorosis, wedge-shaped defects, pathological wear, etc. The main cause of dental defects is the complication of carious disease. After tooth extraction, the dentition changes significantly. The clinical picture in this case is quite diverse and depends on the number of lost teeth, their location in the dentition, the function of these teeth, the type of bite, the condition of the periodontal tissues, etc. The movement of teeth forms a clinical picture. In the presence of large defects of the dentition, the teeth that have lost the main and adjacent antagonists will move almost vertically, and the teeth that have preserved the adjacent antagonists will lean towards the defect. The biggest problem is the explanation of dental cell elongation in the case of partial tooth loss. There are two clinical forms of vertical movement of teeth under the condition of loss of antagonists (V.O. Ponomaryova). In the presence of the first form, tooth movement is accompanied by an increase in the cellular process or part (dental cell elongation). In this case, the ratio of the external and intracellular part of the tooth does not change. In the presence of the second form, tooth protrusion takes place against the background of an enlarged cellular process or part, but with exposure of part of the tooth root. There is no significant difference between these forms. The second form corresponds to the later stages of the reconstruction of a cellular process or part. Deformation of the occlusal surface of the tooth rows. The biggest difficulties for orthopedist dentists are the explanation of the lengthening mechanism in case of partial loss of teeth. It is appropriate to recall the work of Godon, who was probably the first to try to explain this complex phenomenon in his theory of articulatory balance. Under articulatory balance, Godon understood the preservation of dental arches and the seamless fit of one tooth to another. Such teeth, in his opinion, are sufficiently protected against the negative effects of the forces that develop during chewing. Given the continuity of the dental arch, each element of it is in a closed chain of forces that not only hold it, but also preserve the entire tooth row.

Godon presented the named link of forces in the form of a parallelogram. According to Godon's scheme, each tooth is under the influence of four forces, the net effect of which is zero. If the integrity of the tooth rows is broken, the links of closed forces are broken and the balance is disturbed. The existing deformation of the occlusal surface of the tooth rows is a consequence of this decay. Godon's theory is unable to explain all the variety of tooth movements in the case of defects in the dentition. D.A. gives his explanation of tooth cell elongation. Calvely. According to him, the balance of the tooth is ensured, on the one hand, thanks to the connective apparatus, and on the other - chewing pressure. In this case, the tooth is in equilibrium or at rest according to the laws of mechanics of mutually balanced forces. E.I. Gavrilov singles out the following possible options for the direction of tooth movement: 1) vertical movement of upper and lower teeth (unilateral and bilateral); 2) mutual vertical movement of upper and lower teeth; 3) distal or medial movement of upper and lower teeth; 4) inclination of the teeth in the lingual-palatal or buccal direction; 5) rotation of the tooth around its axis; 6) combined movements.

3.2. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);

3.3. requirements for work results, including registration;

— Conduct an examination.

— Analyze the results of the examination of a dental patient.

— Make a plan for additional examination of the patient.

— Explain the results of clinical and special (additional) research methods.

3.4. control materials for the final stage of the lesson: assignments, tasks, tests, etc. (if necessary).

4. Summary:

— Anamnesis of the patient. Main complaints. Medical history. Dental history.

— Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.

— Intraoral examination. Assessment of the state of bone and mucous formations affecting the fixation of the prosthesis in the oral cavity.

— Determination of mobility and flexibility of the mucous membrane.

— Diagnosis. Plan and objectives of orthopedic treatment.

5. List of recommended literature (main, additional, electronic information resources):

Main:

- Orthopedic dentistry: textbook / Rozhko M.M., Nespryadko V.P., I.V. Paliychuk and others; under the editorship M.M. Rozhka, V.P. Nespryadka. - K.: Medical Center "Medicine"; 2020. - 720 p.

- Rozhko M.M., Nespryadko V.P., Mykhaylenko T.M. and others. Dentoprosthetic technique. K.: Book plus; 2016. 604 p.

- Rozhko M.M., Popovych Z.B., Kuroyedova V.D. Dentistry. Textbook. K.: Medical University "Medicine"; 2018. 872 p.

Additional:

Dentistry: in 2 books. : textbook. Book 2 / M.M. Rozhko, I.I. Kirylenko, O.G. Denisenko and others. ; under the editorship M.M. Horn — 2nd edition. — K.: VSV "Medicine", 2018. — 992 p. ; color kind.

- Material science in dentistry: a study guide / [Korol D.M., Korol M.D., Ojubeiska O.D. etc.]; in general ed. King D.M. – Vinnytsia: New book, 2019. – 400 p.

Electronic information resources:

- State Expert Center of the Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>

- National Scientific Medical Library of Ukraine <http://library.gov.ua/>

- National Library of Ukraine named after V.I. Vernadskyi <http://www.nbuv.gov.ua/>

Practical lesson No. 6

Topic: Pathological effects of materials used in orthopedic dentistry. Differential diagnosis, treatment and prevention. Orthopedic measures in the complex treatment of maxillofacial injuries.

Goal:

to be able to plan a patient's examination; perform differential diagnosis of inflammation of the mucous membrane when using orthopedic prostheses. Teach students to diagnose types of inflammation of the mucous membrane. To teach the methods of complex treatment and the principles of prevention of inflammation of the mucous membrane. Basic concepts: examination of a dental patient, dental instruments for examination, X-ray diagnostics, TMJ, deformation of dental rows, dental prostheses

Equipment: Computer, phantoms, examination instruments.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge:

2.1. requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units);

Know:

— structure of the upper jaw;

— structure of the lower jaw;

— structure of the temporomandibular joint;

— the structure of the mucous membrane of the oral cavity.

Be able:

- determine the relationship between the upper and lower jaws;
- to examine the patient
- read x-rays

— Carry out differential diagnosis of inflammation of the mucous membrane

2.2. questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson.

- History and clinical examination.
- Main complaints.
- Dental history.
- Medical history.
- Examination. External overview.
- Examination of the temporomandibular joint.
- Examination of the masticatory muscles.
- Examination of the mucous membrane.

3. Formation of professional abilities and skills (mastery of skills, curation, determination of treatment regimen, laboratory research, etc.):

3.1. Content of tasks (tasks, clinical situations, etc.);

An urgent problem of modern orthopedic treatment of patients with complete loss of teeth is the prevention and delaying for as long as possible atrophy of the maxillofacial skeleton and related muscles. Despite the noticeable improvement in the quality of dental care, the appearance and widespread introduction of new materials into the practice of doctors, the production of removable prostheses with a rigid base reaches 80%.

This is due to the simplicity of their production and lower costs. However, removable prostheses are combined irritants that have a mechanical, chemical-toxic, sensitizing, and heat-insulating effect on the mucous membrane of the oral cavity and the neuroreceptor apparatus. According to E. Lenz (1990), M. K. Dragobetsky (1990, 1991), from 20 to 26% of patients do not use manufactured removable prostheses, and 37% are forced to adapt to low-quality prostheses. In addition, in 52% of cases, these structures have poor fixation and stabilization, and in 64% of patients, diseases of the mucous membrane develop under the bases of the prostheses. Accordingly, the requirements for the manufacture of dental prostheses are increasing (Kopeykin V.N., Lebedenko I.Yu., Anisimova S.V. 1995). They consist not only in the restoration of the maxillofacial system in terms of functionality and aesthetics with the help of complete dentures, but also in the maximum preservation of the tissues of the prosthetic bed for successful re-prosthetics (E.S. Kalivrajyan 1986). Prevention of atrophy of the mucous membrane, maxillofacial skeleton and related muscles should be the primary task of orthopedic treatment of patients with complete loss of teeth.

Removable prostheses, like any medical device, have a therapeutic and prophylactic effect. Along with this, being foreign bodies and irritants in the oral cavity. When using them, side effects are noted. V. Novorolska (1973), who studied the distribution of pressure under the base of a removable prosthesis, found that it varies in the range from 8 to 9 kg/cm². The pressure drop that occurs when chewing

food is from 1.8 to 2.8 kg/cm². Researches of recent years have proven that any prostheses cause pathological changes in the mucous membrane of the prosthetic bed. In people of older age groups, changes in all structural elements of the epithelium were found, which are manifested in the violation of keratinization processes and the structure of intercellular contacts, which leads to a decrease in the mechanical strength of the stratum corneum and causes a violation of the barrier function of the epithelium (Alimov S.Ya. 1979). MA. Rebrova (1968) and R.Sh. Shaimordenova (1969) studied the condition of the mucous membrane of the prosthetic bed depending on the terms of use of removable prostheses.

They found that when using prostheses for five years, there is a thickening of the epithelial layer as a whole, which is an adaptive reaction. With a further increase in the terms of use, the epithelial layer gradually thins and the corneous and granular layers completely disappear. After orthopedic treatment with removable lamellar prostheses, the area of edentulous jaws decreases. The size of the change in area depends on the period of use of prostheses: after 1 year, the area of the upper jaw decreases by 1.5%, of the lower jaw by 3.38% from the initial value, after 3 years by 6.7 and 10.29%, respectively (V.P. Naumov, 1974). Atrophic processes occurring in the region of the top of the alveolar ridge and part of the jaws are caused by a number of factors: uneven distribution of the masticatory load on the prosthetic bed, inconsistency of the relief of the surface of the base of the microrelief of the mucous membrane, mechanical compression of the mucous membrane of the prosthetic bed by the base of the removable prosthesis. Studies of the process of bone tissue atrophy of edentulous jaws carried out by many scientists have made it possible to establish a clear advantage of vertical resorption over horizontal resorption, as well as a high rate of flow of atrophic processes occurring in the lower jaw compared to the upper. The greater the atrophy of the alveolar part of the jaw, the more problematic it is to create an adequate support for a removable prosthesis in order to fix and stabilize it, especially on the lower jaw. It is impossible to stop the natural processes of atrophy at this stage of the development of dentistry. Therefore, after a certain period of time, in patients with a complete absence of teeth, the discrepancy between the profile of the bone structures of the jaw and the profile of the rigid or two-layer base of the prosthesis will increase. In some people, such a discrepancy passes rather slowly and after several years the prosthesis is replaced by a new one, which does not lead to noticeable morphological changes in hard and soft tissues. The situation is much worse in cases of increased degree of atrophy of the bone tissue of the jaws and, as a result, in the early stages, the discrepancy between the relief of the prosthesis base and the prosthetic bed becomes more significant. The development of new, more modern methods and methods at the stages of manufacturing prostheses will increase the efficiency of using removable structures of prostheses. In this regard, the question of preserving the tissues of the prosthetic bed for successful further prosthetics, as well as reducing the degree of mobility of the mucous membrane under the bases of prostheses of the full dentition, is relevant and requires further study.

The toxic effect of the prosthesis is related to the material or materials from which it is made. Acrylic stomatitis, caused by an excess of monomer in the base when the

polymerization regime is disturbed, is well known in the clinic. Monomer burns are also possible when replacing prostheses, if preventive measures are not taken. Oxides of heavy metals included in the solder can be toxic to the body. The toxic effect of the prosthesis can be avoided by using appropriate materials and following the technological regime. The possibility of the occurrence of stomatitis from toxins of bacterial origin with poor oral hygiene is not excluded. The traumatic effect of the prosthesis consists in damage to the mucous membrane by the base of the prosthesis, the edges of the crowns, the relief and borders of which do not correspond to those of the prosthetic bed. Injury can also be caused by staples, isolation chambers in the base, roughness on its inner surface. The traumatic effect can be expressed in both micro- and macrotraumas (bedsores) and in a gross form can be easily prevented by exact matching of the prosthesis, the surface of the prosthetic bed, its borders, as well as timely replacement of poor-quality prostheses. The appearance of allergic reactions when using prostheses is currently not in doubt. It should only be noted that the allergen can be inorganic components of the prosthesis material that come into contact with tissue proteins. The implanted prosthesis is felt by the patient as a foreign body. The degree of sensation of a foreign body depends on the type of prosthesis. Plate prostheses, which cover a significant surface of the mucous membrane of the prosthetic bed, have the greatest irritating effect, bridge-shaped prostheses have a smaller effect, since the surface of their contact with the mucous membrane is insignificant, and only when they narrow the dental arch, difficulty in speech movements and speech disorders can occur. However, when getting used to the prosthesis, conditioned reflex acts may also occur. In our opinion, they take place during the production of rational chewing movements after the prosthesis is applied, which changes the character of the previously existing articulation. G. B. Shilov drew attention to conditioned reflex connections formed during adaptation to prostheses in 1971. The body's reaction is expressed not only in abundant salivation, but also in qualitative changes in saliva.

Yes, 3. S. Vasylenko (1965) in an experiment on animals came to the conclusion that removable prostheses cause pronounced shifts in the function of the salivary glands and mucous membrane of the oral cavity on the first day of using the prostheses. The nature of the shifts, as the author notes, depends on the quality of the manufactured prostheses and their physical and chemical properties. Shifts are more pronounced when using prostheses made of AKR -7 plastic. I.M. Oksman (1935), I.M. Gagua (1949), L.A. Pashkovska (1954) studied the function of salivary glands in denture wearers. According to L.A. Pashkovska, amylolytic activity and saliva secretion increases in most cases in users of removable plastic prostheses. The author believes that this is not related to the material of the prosthesis at all, but to the normalization of the chewing function after prosthetics. According to A. D. Ogoreltseva (1949), the monomer itself sharply suppresses the activity of salivary amylase, while the dough-like mass and polymer-powder AKR-7 are passive in this regard. A. G. Bakh-tiyarova-Romanenko (1967) and V. G. Vasylchenko (1968) noted a decrease in salivary lysozyme activity under the influence of prostheses made of acrylic plastics. The basis of the removable lamellar prosthesis, covering the mucous membrane, finally tactile, pain, taste and temperature sensitivity.

- 3.1. recommendations (instructions) for performing tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.);
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 - Analyze the results of the examination of a dental patient.
 - Make a plan for additional examination of the patient.
 - Explain the results of clinical and special (additional) research methods.
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- Examination. External overview. Reduction of the lower third of the face, expressiveness of nasolabial and chin folds, degree of mouth opening (free, difficult). Temporomandibular joint. Examination of the masticatory muscles.
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- Determination of mobility and flexibility of the mucous membrane.
- Diagnosis. Plan and objectives of orthopedic treatment.

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