

THE MINISTRY OF HEALTH OF UKRAINE
THE HIGHER STATE EDUCATIONAL INSTITUTION OF UKRAINE
"UKRAINIAN MEDICAL STOMATOLOGICAL ACADEMY"

Approved at the meeting of orthodontics
« ____ » _____ 20 ____ y.
protocol № ____ by _____
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METHODICAL RECOMMENDATION
for independent work of students during the preparation
to practical lessons and on the lessons

Academic discipline	Orthodontics
Module № 3	
The theme of the lesson № 4	Clinical and biological substantiation of children's dentures. Partial removable dentures in children. Complete removable dentures in children. Features of orthodontic treatment of children with complicated defects of dentitions.
Course	V
Faculty	Preparation of foreign students

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1. The relevance of the topic. Pediatric prosthetics is part of routine oral cavity sanitation in children since early extraction of temporary teeth violates the integrity of dental arches. This leads to impairment of the masticatory function, development of dento-gnathic deformities, and also diseases of the digestive organs. Defects of dental arches occupy a special place among dental diseases. This is connected with the characteristics of the children's organism which is actively developing. Unfortunately many professional dentists underrate the role of temporary teeth.

2. Specific objectives:

To know the causes that contribute to the development of the dental arches defects.

To know the features of the dental arches defects.

To know the algorithm for examining patients with the dental arches defects.

To know the classification of dental arches defects.

To be able to diagnose different clinical forms of the complicated dental arches defects.

3. Basic knowledge's, abilities, skills necessary for studying the topic (interdisciplinary integration)

Name of previous disciplines	Skills
1. Anatomy	to determine the deviation of the teeth hard tissues structure
2. Propaedeutics of orthopedic somatology	to know the classification and features of dentures for separate teeth defects reconstruction.
3. Orthodontics	to know classification of malocclusion by Angle

4. Tasks for independent work during preparation to the lesson and on the lesson

4.1. A list of the main terms, parameters, characteristics that need to learn by the student during the preparation to the lesson:

Terms	Definition
1. Partial removable denture	This is a construction that is used when there is no part of the teeth, but the jaws still have healthy teeth. Such dentures help restore lost teeth and correct cosmetic defects.
2. Complete removable denture	This is a construction that is used when all teeth are absent. They are not physiological devices, since during the chewing process the load is transferred to the mucous membrane of the oral cavity, and through it to the alveolar processes and jawbone, and also the palate, which is not physiological. Such dentures help restore chewing function.

4.2. Theoretical questions to the lesson:

1. Name congenital and acquired causes of dental arch defects.
2. From what age can dental arch defects be replaced with dentures in children?
3. What time prior to second dentition shouldn't one replace dental arch defects?
4. What should be considered to determine indications for prosthetics in children?
5. Enumerate general indications for replacement of dental arch defects in children.
6. At what age can one make whole cast denture constructions for dental arch defect replacement in children?
7. When are only removable denture constructions indicated for dental arch defect replacement in children?
8. What should be considered to determine indications for prosthetics in children according to L.D. Chuchmay?
9. What forms of toothless alveolar process are differentiated by L.D. Chuchmay?
10. Into what groups does S.I. Tril subdivide all dentures depending on their functionality?
11. Who was the first to offer prophylactic supporting appliances-dentures?
12. What are the structural features of L.V. Ilyina-Markosian's removable denture?
13. What is the difference between T.V. Sharova's and L.V. Ilyina-Markosian's partial removable dentures?
14. What are the structural features of Y.I. Babaskin's removable denture?

4.3. Practical works (task) which are executed at the lesson:

Identification of risk factors for development of DADs.

Definition of risk groups for development of DADs.

Collect anamnesis of the disease of an orthopedic patient with DADs.

Describe and classify possible deviations from the norm in the dento-alveolar system with DADs.

Correctly put the corresponding previous diagnosis for patient with DADs.

The content of the topic:

INDICATIONS AND CONTRAINDICATIONS FOR PEDIATRIC DENTURES

Opinions still vary on the terms of prosthetics in children with DADs conditioned by early loss of temporary teeth. Representatives of the old school advocate postponed orthopedic treatment of children until second dentition is complete (H. Angel, 1909; V. Andresen, K. Haupl, 1942). Some authors (L.V. Ilyina-Markosian, 1949; Y.N. Aleksandrova, 1960; L.D. Chuchmay, 1967; H.H. Belousova, 1970; A.F. Borkovkina, 1971; T.M. Kuchumova, K.N. Shamsiyev, 1967; J. Farrell, 1969, and others) consider prosthetics in children possible from 2-2.5 years.

We believe that DADs in children should be treated as soon as possible, i.e. from the moment of their appearance. The sooner a defect is treated, the less

evident morphological and functional changes in the dento-gnathic apparatus are.

Opinions also vary on defects treatment in the period of second dentition. Some authors (A.L. Chuchmay, 1968; F.Y. Khoroshilkina, Y.N. Aleksandrova, 1981) offer treating DADs 10-12 months prior to second dentition, T.V. Sharova (1980) – 1.5 years prior.

Findings of clinical investigations show that DADs treatment depends not only on the terms of second dentition, but also on the form of the alveolar process in the region of the defect. If the terms of second dentition approach and the form of the alveolar process still remains sharp or rounded, DADs are to be replaced by dentures because it testifies to deep location of permanent teeth follicles.

In order to determine indications for orthopedic treatment and choose pediatric denture construction one is recommended to take into account the cause, time of appearance and extent of DADs, condition of occlusion, the period of its formation, the degree of morphological and functional changes and general condition of the child. However, to choose efficient denture constructions one should also take into account defect topography and localization, the type of its limitation, i.e. with what teeth, temporary or permanent, it is limited, the degree of formation and resorption of the roots of these teeth, their functional endurance and availability of place for artificial teeth. Besides, each age period has its peculiarities, which should be considered in prosthetics of children with DADs.

General indications for DADs replacement:

- extraction of teeth a year prior to second dentition;
- adentia (partial and multiple);
- necessity of eruption processes stimulation;
- postoperative defects;
- underdevelopment of the upper jaw in congenital pathology;
- dento-gnathic anomalies combined with defects;
- disturbance of the processes of occlusion height establishment;
- esthetic defects with speech function impairment.

Indications for DADs replacement with fixed denture constructions. According to Z.S. Vasylenko's and S.I. Tril's classifications there were developed indications for using different denture constructions:

- in temporary and transitional occlusions in minor lateral DADs there are indicated dental bridges with unilateral support or extension dentures;
- in the frontal part in the 2nd period of transitional occlusion in minor and moderate DADs there are indicated whole cast dental bridges with rigid connection of elements without abutment teeth preparation;

- in other cases there are indicated removable denture constructions.

Indications for DADs replacement with removable denture constructions:

- all the defects referred to class 2;
- associated DADs in all age periods of occlusion;
- defects in the frontal part in temporary and 1st period of transitional occlusion;
- major defects in all periods of occlusion;

- defects complicated by dento-gnathic deformities;
- DADs which appeared 0.6 months prior to second dentition;
- DADs associated with alveolar process defects caused by surgical interventions;
- esthetic defects with functional disorders;
- age older than 2.5 years.

A separate indication for using a denture is the form of a toothless alveolar process. L.D. Chuchmay (1967) singles out three forms of a toothless alveolar process: sharp, rounded, round, by which one can determine the depth of permanent teeth follicles location. The sharp form of the alveolar process testifies to deep location of permanent teeth germs. In this case, irrespective of the terms of second dentition, DADs are to be replaced. The rounded form of the alveolar process testifies to the fact that a permanent tooth germ is located closer to the ridge bone. Such defects should be replaced a year prior to second dentition. The round form of the alveolar process testifies to surface location of permanent teeth germs, under the periosteum or under the mucosa. Such defects should not be replaced.

Contraindications for using pediatric dentures include severe stomatological diseases, mental disorders, diseases of the mucous tunic, denture materials intolerance, not sanified oral cavity, impossibility of establishing contact with the child.

In the practice of pediatric prosthodontics there are widely applied **removable dentures** developed by L.V. Ilyina-Markosian (1949). She recommends making partial removable laminar dentures with clasps, which do not cover the alveolar process on the vestibular side. The author believes that in the distal sections the dentures should end on the upper jaw behind the second temporary or first permanent molars, on the lower jaw – also behind the last teeth.

In case of early loss of temporary molars Y. Kovalskiy (1957) made demountable removable dentures for both jaws. He used a sliding extensible removable denture on the lower jaw. The author believes that such constructions do not hamper jaw growth.

I.S. Lusinska-Szurek (1966, 1967) offers to replace DADs at any age with removable dentures with loop-shaped locks. The author insists that these dentures do not hamper jaw growth, are simple to make, easy to use, hygienic, and have good fixation.

In order to prevent premature eruption of permanent teeth T.F. Vinogradova (1968) recommends using dentures which exert no pressure on the alveolar process, taking into account the jaw growth throughout the toothless part.

T.V. Sharova (1988) used a partial removable denture, which covers the alveolar process on the vestibular side. The edge of denture basis ends with a thickening, which immerses into the mucous tunic of the transition zone and stretches it thus irritating the periosteum and stimulating appositional growth of the toothless alveolar process. To provide the appositional growth one creates standard space 1-1.5 mm deep on the vestibular side between the denture basis and the

alveolar process. Authors recommend making clasps for the period of adaptation to the denture and removing them afterwards to avoid injuries of the permanent teeth enamel and periodontium.

O.Y. Kalpakiants and coauthors (1987) offered a couple of modifications of skeletonized partial removable dentures for the upper jaw and dentures with a wire arch of 5 mm section for the lower one. A peculiarity of these dentures is a decrease of the basis in the region of permanent teeth. In order to prevent overload of prosthetic field tissues the authors expanded the boundaries of dentures in the vestibular and palatine directions, besides, they used supporting structures, mainly on the temporary canine teeth.

L.P. Grigoryeva, S.V. Radlinskiy (1992) developed a technique of making a prophylactic denture for children with premature loss of the lower temporary molars. The dentures were made without the laboratory stage and with possible change of their dimensions. The mentioned construction of a prophylactic denture for children with premature loss of the lower temporary molars consists of a laminar basis, artificial teeth, Adams' clasp and a metal arc with curves in the plane of the anterior part of the denture basis. The construction is realized in three varieties called standard modules, which allows conducting prosthetics in case of DADs location on the right, left or both sides of the lower jaw. Changing the length of the metal arc with curves, the doctor can change the dimensions of the anterior part of the prophylactic denture, which is necessary both to adjust a standard module to a certain patient, and to correct the denture as the jaw grows. In the clinic a prophylactic individual denture is made of a standard module of suggested construction in such a way:

- the doctor chooses one of the three varieties of the standard module depending on the clinical case;
- removes artificial teeth not subject to prosthetics with a cutter or a drill;
- measures the depth of the anterior part of the standard module by stretching or compressing the curves of the metal arc;
- the module is fit in the lateral parts of the dental arch for it to be located freely in the prosthetic bed when the teeth are occluded;
- the closely fitting module is relocated with the help of self-hardening plastic.

To decrease the load on the abutment teeth and provide good fixation of the denture Y.I. Babaskin (2004) recommends partial removable dentures with semilabile cast clasps, which provide all the stages of physiological mobility of the abutment teeth

REQUIREMENTS TO REMOVABLE PEDIATRIC DENTURES

General Requirements. Removable pediatric dentures must:

- be easy to make, affordable, light, indifferent;
- do not violate oral hygiene;
- meet esthetic requirements;
- restore the functions of mastication, swallowing, speaking, respiration;
- support physiological balance in the oral cavity;
- prevent the development of dento-gnathic deformities of the dental arches

and occlusion;

- do not hamper the growth and development of the jaws;
- serve not only to restore dental arch defects, but also to correct occlusion

when necessary;

- be made without traumas and pain.

Design Requirements. Removable pediatric dentures must:

- be made of colorless plastic;
- contain neither clasps nor artificial gum enveloping the alveolar process from the vestibular side (L.V. Ilyina-Markosian, 1950);
- cover the alveolar process from the vestibular side with the standard space, elongated, thickened and rounded edge of the denture (T.V. Sharova, 1985);
- have an expanded boundary of the basis for better fixation and redistribution of masticating pressure on the alveolar processes and apical basis;
- provide release of tori and dysostoses;
- cover the retromolar space and maxillary tuber;
- have rounded edges to prevent injuries of the mucous tunic and provide better fixation;
- foresee the use of orthodontic elements in the dentures when necessary.

Pediatric removable dentures are made in the clinic and laboratory by applying the same techniques as in adults.

BOUNDARIES OF REMOVABLE DENTURE BASES ON THE UPPER JAW

The size of the denture basis on the upper and lower jaws is different and depends on: localization and extent of the defect, form of the alveolar process, depth of permanent teeth follicles location, age of patients.

Hire distal boundary on the upper jaw must reach line A and end in the form of a semilunar incisure pointed with its convex part in the direction of the hard palate with a 1-1.5 cm recess in the center and cover the maxillary tubers creating conditions for free growth of the jaw in the distal part.

The lateral boundaries pass along the mucogingival fold immersing into it with the rounded edges. As for partial removable dentures, different authors note different location of these boundaries. According to L.V. Ilyina-Markosian, the alveolar process is not covered from the vestibular side. According to T.V. Sharova, the alveolar process is covered from the vestibular side, the denture edge is thickened and immersed into the tissues of the mucogingival fold. A 1-1.5 mm standard space is created between the denture basis and the alveolar process to prevent inhibition of appositional growth.

The boundary of the denture basis in the frontal part depends on the form of the alveolar process, length and condition of the lip. If the lip is free (movable), the alveolar process is covered with an artificial gum from the vestibular side. In such children esthetic norm is not broken. If the lip is shortened, the teeth are located tangentially to the denture basis, the alveolar process is not covered from consideration of esthetics because the denture becomes visible.

On the upper jaw the boundary of the denture basis on the inside passes

along the frontal part; if there are teeth, it passes above the dental tubercle in orthognathic occlusion or covers the dental tubercle in direct or mesial occlusion.

In the lateral part the basis covers the palatine surfaces of the teeth in the oral cavity.

Boundaries of the denture basis on the lower jaw:

- on the buccal side the boundary passes along the internal oblique line;
- the distal one – behind the last teeth if teeth are missing at the level of the jaw branch edge;
- the vestibular one – as on the upper jaw;
- if teeth are preserved, the basis in the frontal part covers the natural teeth by 2/3 of their length, in the lateral parts on the lingual side the natural teeth are covered completely.

Installation of teeth in removable dentures:

- one usually uses pediatric sets of teeth. One should take into account age peculiarities of the patient before installing teeth;
- in milk occlusion teeth are located in one horizontal plane without occlusal curves, in the center of the alveolar process in the form of a semicircle. The upper teeth cover the lower ones by 1/3 of the cutting edge, in the end of the period of temporary occlusion the teeth are arranged in direct occlusion;
- in transitional occlusion all the temporary teeth are arranged in one horizontal line, and permanent teeth – as in adults in orthognathic occlusion;
- in permanent occlusion – as in adults.

The modes of removable denture fixation are subdivided into biophysical and mechanical.

Biophysical:

- anatomical retention;
- adhesiveness.

Mechanical:

- with the help of bent clasps;
- with the help of dentogingival clasps.

Anatomical retention is provided at the expense of anatomical formations (maxillary tubers, retromolar space, interdental spaces, due to extended boundaries of the denture basis), adhesiveness – at the expense of exactness of the abutment of two surfaces and the presence of a thin layer of liquid between them.

Factors providing retention of a complete removable denture in children. In complete removable dentures one should differentiate such notions as fixation, stabilization and balance.

Fixation means keeping the denture in the prosthetic bed in the state of rest and is provided at the expense of exactness of the abutment of two surfaces and the presence of a thin layer of liquid between them.

Stabilization means keeping the denture in the prosthetic bed in case of non-masticatory movements, it is provided by correct denture boundaries.

Balance means keeping the denture during masticatory movements and is provided by correct mounting of teeth.

REMOVABLE DENTURE-MAKING TECHNIQUE

The technique of making removable dentures in children includes three laboratory and three clinical stages. After the denture is made, the child and his parents are given recommendations concerning the way of wearing the denture and looking after it. A peculiarity of pediatric dentures is the ability not to hamper the growth of the jaws, which makes it possible not to change the dentures. L.V. Ilyina-Markosian recommends changing dentures depending on the patient's age:

- in temporary occlusion – in 6-8 months;
- in transitional – in 8-10 months;
- in permanent – in 1-1.5 years.

T.V. Sharova offers to conduct relocation, because children get used to the denture, and change it when necessary. Later the patient with removable dentures must visit his dentist every 1.5 months.

ORTHOPEDIC TREATMENT FOR DENTAL ARCH DEFECTS IN TEMPORARY OCCLUSION

Replacement of dental arches in children, especially in the period of temporary occlusion, plays an important role in further development of the masticatory apparatus, provides correct performance of functions, prevents the development of persistent dento-gnathic deformities, creates favorable conditions for the correct formation of intra-articular relations. The primary aim of DADs replacement in temporary occlusion consists in maintaining articulatory balance and preventing the development of dento-gnathic deformities. When the doctor plans treatment and chooses pediatric denture constructions, he must base his approach on the knowledge of anatomical features of the dento-gnathic apparatus and DAD, its etiology, the degree of function impairment and child's age. Therefore pediatric dentures must meet a number of requirements: they must promote proper growth and formation of all the elements of the masticatory apparatus, provide physiological transfer of masticatory pressure, not inhibit jaw growth, be indifferent in the oral cavity, and also easy to make, esthetically adequate.

Orthopedic treatment of DADs in children in the period of temporary occlusion has its peculiarities. When one chooses denture construction, he must consider defect localization, size, condition of the periodontal tissues and the teeth limiting the defect.

For this purpose one uses prophylactic dentures consisting of an abutment crown, an intermediate part replacing the missing tooth or a wedge with an occlusal or palatine plate. In minor bilateral defects one can use crowns with a wedge, dental bridges, partial removable dentures.

ORTHOPEDIC TREATMENT FOR MINOR DENTAL ARCH DEFECTS IN THE FRONTAL PART

DADs in the frontal part, minor, associated, and also moderate and major, are to be replaced with partial removable dentures.

Minor unilateral bounded DADs, especially in the lateral part, are the most widespread. However, patients with such DADs consult a dentist too late, when

teeth displacement has already taken place. Therefore it is very important for pedodontists to timely find such children during preventive examinations in preschool institutions and refer them for orthopedic treatment. To replace minor, not complicated defects in the lateral part, if the periodontium is unaffected and the teeth limiting the defect are intact, it is more expedient to use fixed denture constructions, which include an abutment crown on a distally located tooth and an intermediate part with a narrow masticatory surface and an occlusal plate on a medially located tooth or a wedge with an occlusal or palatine plate, or extensible denture constructions. One should give preference to extensible constructions with bilateral support, which allows both preserving place in the dental arch and providing functional adequacy of the denture. Extensible dentures promote natural transfer of masticatory pressure by means of the periodontium, prevent the development of dento-gnathic deformities, do not hamper jaw growth, preserve space for permanent teeth eruption and thus promote their timely eruption, restore masticatory apparatus efficiency.

ORTHOPEDIC TREATMENT FOR MINOR BILATERAL BOUNDED DENTAL ARCH DEFECTS IN THE LATERAL PART

Minor bilateral bounded DADs in the lateral part are observed less frequently than unilateral ones. In unilateral DADs a child adapts to unilateral mastication of food, and in bilateral defects adequate preparation of food is considerably complicated. As a result, bilateral defects are to be timely replaced. In this case it is reasonable to use such constructions: crowns with wedges, K.N. Shamsiyev's dental bridge, extensible dental bridges, partial removable dentures. One should give preference to fixed dentures. If a patient is undisciplined and does not want to use removable dentures, the doctor should make fixed prophylactic dentures.

If the periodontal tissues of the teeth limiting the defect are functionally inadequate due to caries and its complications and incomplete formation of their roots, it is inexpedient and even dangerous to use fixed constructions.

During replacement of DADs complicated by dento-gnathic deformities, especially vertically, one should prefer removable denture constructions. Besides, during their application one can successfully combine prosthetic treatment with orthodontic.

ORTHOPEDIC TREATMENT FOR MINOR ASSOCIATED DENTAL ARCH DEFECTS

Minor associated defects (in the frontal and lateral parts) are observed less frequently.

Parents of children with such pathology, as a rule, appeal to an orthodontist themselves with complaints of absence of teeth, phonetic disorders, esthetic defects, appearance of bad habits in their children. In such cases one should use mainly partial removable dentures.

ORTHOPEDIC TREATMENT FOR MODERATE AND MAJOR DENTAL ARCH DEFECTS

Moderate and major associated DADs are observed less frequently than

minor ones, still, they cause severe morphological and functional violations of the dento-gnathic apparatus in children, particularly there sharply decreases masticatory efficiency.

There is observed underdevelopment or atrophy of the alveolar process in the region of the defect. In a very short time there develop dento-gnathic deformities accompanied by dento-alveolar advancement of the teeth, which lack antagonists; in the region of the defect there is observed shortening of the dental arch caused by displacement of the teeth limiting the defect, and also by inhibition of jaw growth in this region. Pathological forms of occlusion develop. Such children refuse to eat solid food, do not want to masticate. In patients with associated DADs speech is disturbed, they are shy, prefer being alone, are bad at establishing contacts. Orthopedic treatment of such children must be complex. If a DAD appeared not long ago, i.e. dento-gnathic deformities have not developed yet, the defect is to be replaced with removable dentures.

In complicated defects removable dentures should include orthodontic appliances, which simultaneously replace DADs, correct dento-gnathic deformities and promote normal functioning of the dentures. In this case the denture should include various elastic orthodontic activators, screws located in different places.

Clinical and auxiliary research methods, analysis of the modes of orthopedic treatment for DADs in the period of temporary occlusion allow arriving at the following conclusion. The primary aim of replacing DADs in temporary occlusion consists in maintaining articulatory balance, stimulation of jaw growth, esthetic, phonetic effects and prevention of dento-gnathic deformities development.

ORTHOPEDIC TREATMENT FOR DENTAL ARCH DEFECTS IN TRANSITIONAL DENTITION

Active growth of all organs and systems takes place in the period of transitional dentition. The dento-gnathic apparatus is characterized by deep morphological changes, conditioned not only by the growth and differentiation of organs, but also by replacement of temporary teeth with permanent ones. Two physiological increases of occlusion height are typical of this period: in the process of eruption of the first permanent molars, and later of the permanent canine teeth or physiological replacement of all temporary teeth with permanent ones. This should be taken into account by a person choosing a denture construction. Early loss of teeth negatively influences jaw formation and configuration in a child. In this case there are often observed dento-gnathic deformities in the form of dento-alveolar advancement. There takes place displacement of teeth to the side of the defect, which leads to its partial or complete narrowing and absence of space for permanent teeth. Displacement of the first permanent molars has an effect on their interrelation conditioning the development of sagittal occlusion anomalies. There is observed a delay of permanent teeth eruption caused by lack of space in the dental arch. Evident deformities of the dento-gnathic apparatus are found in case of early extraction of the frontal permanent teeth. In this case the growth of the alveolar process in the frontal part is delayed, the dental arch shortens and the

inter-incisor line is displaced. Due to lack of space permanent teeth erupt outside the dental arch. The severity of dento-gnathic deformities is in direct proportion to DAD prescription. Timely orthopedic care allows restoring articulatory balance, impaired masticatory function, preserving space for permanent teeth and thus creating conditions for the normal growth and development of the dento-gnathic apparatus. When one replaces DADs with dentures in the period of transitional occlusion, he should take into account localization of the defect, its size, type of limitation (what teeth limit the defect), the degree of root formation and resorption, presence or absence of space for teeth.

ORTHOPEDIC TREATMENT FOR MINOR UNILATERAL ASSOCIATED DENTAL ARCH DEFECTS IN THE LATERAL PART

Minor unilateral associated DADs in the lateral part can form as a result of premature extraction of the first and second temporary molars, most frequently on the lower jaw. Orthopedic treatment of this pathology depends on the type of limitation and functional condition of the root system of teeth. If a DAD is limited by temporary teeth, it is to be replaced with a crown with a wedge or a dental extensible bridge, or a dental bridge with unilateral fixation. If a DAD is limited by temporary and permanent teeth, the choice of construction depends on the degree of first permanent molar roots the root of the permanent molar is more than half formed, one can make crowns with a wedge. If a permanent molar is displaced to the side of the defect, one should use a crown with a wedge-activator, which may help to return the tooth to the previous position. In the second half of the period of transitional occlusion minor DADs in the lateral part should be replaced with crowns with a wedge, which, nevertheless, should be made in the form of a narrow occlusal surface that not only prevents deformity development but also partially restores the masticatory function. Besides, there can be used whole cast and extensible dental bridges. If the teeth limiting the defect are displaced to the side of the missing teeth, as well as in the 1st period, one should use a crown with an activator.

ORTHOPEDIC TREATMENT FOR MINOR BILATERAL BOUNDED DENTAL ARCH DEFECTS IN THE LATERAL PART

Minor bilateral bounded DADs in the lateral part are observed less frequently than unilateral; they have certain peculiarities. Thus, if in unilateral DADs a child can adapt to mastication of food on one side where all antagonists are preserved, in bilateral defects mastication is complicated and the time of food chewing is prolonged. In such a case children, as a rule, avoid solid food and in some time do not want to masticate.

When one replaces such DADs, he should give preference to partial removable dentures; nevertheless, it is also possible to make fixed dentures, notably: if a patient refuses to use removable dentures, does not tolerate plastic, and if there are no indications for making them (the roots of permanent teeth are more than half formed, and less than 1/3 of the length of the roots of temporary teeth is resorbed).

ORTHOPEDIC TREATMENT FOR MODERATE AND MAJOR

BOUNDED DENTAL ARCH DEFECTS IN THE LATERAL PART

Moderate and major bounded DADs in the 1st period of transitional dentition are to be replaced with partial removable dentures, in the 2nd – removable and fixed constructions. Untimely replaced moderate and major DADs in children are soon complicated by deformities, which may cause changes of both dental arches and jaws ratio. In this case the most frequent complications are deep and distal occlusions. This pathology is more often caused by bilateral defects of the lower jaw as a result of its underdevelopment and distal displacement. In anomalous structure of permanent teeth eruption it is reasonable to replace DADs with the help of skeleton partial removable dentures (which have no basis in the region of permanent teeth) according to A.D.Kalvelis' technique.

ORTHOPEDIC TREATMENT FOR MINOR DENTAL ARCH DEFECTS IN THE FRONTAL PART

The choice of denture construction depends on the period of occlusion. In the 1st period of transitional dentition DADs are to be replaced with partial removable dentures or appliances-dentures, in the 2nd period – with fixed dentures depending on the type of the defect (what teeth limit it, if there is space for an artificial tooth, the degree of root formation and the type of occlusion). If there is space in the dental arch for artificial teeth and the roots of the abutment teeth are formed, it is reasonable to replace the defect with whole cast monolithic dental bridges with a bilateral support or extensible dental bridges. In this case the abutment teeth are not prepared. If the abutment teeth change color, their form changes to anomalous, or the teeth destroy, one should crown them with combined crowns.

Moderate bounded DADs in the frontal part in the 2nd period of transitional dentition are to be replaced with both partial removable and fixed denture constructions.

The choice of construction depends on the functional condition of the abutment teeth. If the functional endurance of the abutment teeth corresponds to the age norm and the space in the dental arch is preserved, it is expedient to use S.I. Tril's whole cast dental bridges with bilateral fixation.

ORTHOPEDIC TREATMENT FOR MODERATE AND MAJOR DENTAL ARCH DEFECTS

Moderate and major DADs in the lateral part and associated defects are to be replaced with partial removable dentures.

It is advisable to replace DADs complicated by dento-gnathic deformities with appliances-dentures, which allow correcting the dental arches and occlusion simultaneously with restoration of dental arch integrity.

Taking into account the things mentioned above we can arrive at a conclusion that in the period of transitional dentition children should be provided with orthopedic care based on the peculiarities of the 1st and 2nd periods of this occlusion, the size of the defect, type of its limitation, the degree of abutment teeth formation, defect localization, and also the type of occlusion. The primary aim of DADs replacement in children in the period of transitional dentition is

normalization of the functional condition of the dento-gnathic apparatus, elimination of esthetic defects, stimulation of jaw growth, normalization of the terms of permanent teeth eruption and prevention of dento-gnathic deformities. In minor unilateral DADs the most efficient constructions are prophylactic fixed dentures (a crown with a wedge, extensible dental bridges and dentures with unilateral fixation without abutment teeth preparation). In minor bilateral defects, depending on the type and functional condition of the teeth, one can use both removable and fixed denture constructions. It is expedient to replace minor and moderate DADs in the frontal part in the 1st period of transitional occlusion with partial removable dentures, in the 2nd period – with dental bridges with bilateral fixation taking into account the functional endurance of the abutment teeth, preserving space for artificial teeth. Moderate and major DADs in the lateral part and associated defects are to be replaced with partial removable dentures.

ORTHOPEDIC TREATMENT FOR DENTAL ARCH DEFECTS IN PERMANENT OCCLUSION

In the period of permanent occlusion DADs prosthetics in children differs considerably from such in the period of transitional occlusion and in adults. There are no temporary teeth in this period, but a considerable number of permanent teeth still have no stable location in the dental arch, their roots are not formed completely. Therefore denture construction meant to replace bounded DADs in permanent occlusion should be chosen based on the mentioned above peculiarities of the patient's age, defect localization and size, condition of the abutment teeth, and also presence of dento-gnathic deformities. On the basis of these factors the authors of the textbook developed indications and contraindications for the choice of efficient denture constructions, which allow replacing the indicated DADs.

ORTHOPEDIC TREATMENT FOR MINOR AND MODERATE DENTAL ARCH DEFECTS IN THE FRONTAL PART

It is the most expedient to replace minor and moderate DADs in the frontal part in children of the indicated age with fixed denture constructions without preparation of the abutment teeth. If the teeth limiting the defect are destroyed and have an anomalous form, are discolored, combined crowns can be abutment elements of dentures.

In overcrowding of teeth or another location anomaly there is required their displacement to the side of the defect with the help of orthodontic appliances, which allows closing the dental arch defect.

ORTHOPEDIC TREATMENT FOR MINOR AND MODERATE DENTAL ARCH DEFECTS IN THE LATERAL PART

It is expedient to replace minor and moderate bounded DADs in the lateral part with fixed dentures. One should choose denture construction in each case on the basis of the condition of the abutment teeth and the size of the defect. If one premolar is missing, one can make a dental bridge with unilateral distal support. One should use a functionally endurable tooth as support. An intermediate part is made in the form of a wedge taking into account the relief of the masticatory surface of the opposing teeth and occlusal plate and in the form of an ordinary

cantilever construction. It is expedient to replace moderate DADs with S.I. Tril's whole cast dental bridges.

The primary purpose of installing such dentures is prevention of medial teeth displacement, because in this period of occlusion the jaws mainly grow in the distal parts.

ORTHOPEDIC TREATMENT FOR MAJOR DENTAL ARCH DEFECTS IN THE LATERAL PART, ASSOCIATED, NOT LIMITED DISTALLY AND COMPLICATED BY DENTO-GNATHIC DEFORMITIES

Major D ADs in the lateral part, associated, not limited distally and complicated by dento-gnathic deformities are to be replaced with removable denture constructions.

Pediatric prosthetics of DADs aims to provide adequate masticatory function, achieve an esthetic effect, normalize all the elements of the dento-gnathic-facial complex and elements of the temporomandibular joints.

ELIMINATION OF VERTICAL OCCLUSAL SURFACE DEFORMITIES

Such a measure first of all allows creating better conditions for prosthetics, secondly, prevents pathological changes of the temporomandibular joints, thirdly, normalizes functional loads on the teeth.

The occlusal surface can be corrected by means of:

- occlusion elevation due to fillings, crowns, orthodontic appliances;
- shortening of the advanced teeth by means of grinding;
- alveolar process rearrangement and dental arches leveling with the help of orthodontic appliances;
- extraction of the teeth damaging the occlusal surface.

The choice of one or another method depends on the type of deformity, extent of lesion, functional value of the preserved teeth, patient's age and general condition.

Leveling of the occlusal surface of the dental arches by means of bite opening in case of dento-alveolar lengthening in the frontal part may be carried out with the help of bite plates, and in the lateral part – occlusal plates. Insignificant bite opening will suffice to eliminate blocking factors and improve prosthetics conditions. The bite is opened by fillings, single crowns, dental bridges, or orthodontic appliances. To determine the extent of bite opening it is not enough to examine the dental arches in the oral cavity, because if teeth are occluding, one may only evaluate the correlation of their buccal tubercles – contacts of the palatine or lingual tubercles are not visible. For this purpose one should make impressions of the dental arches, cast diagnostic models and plaster them in the articulator (occluder). The method of bite opening is chosen according to clinical presentation; it cannot be standard. At the same time, one may avoid mistakes if he observes some rules, notably:

- bite may be opened by not more than 2 mm (between the frontal teeth). Wide opening is acceptable if teeth displacement is accompanied by considerable closing of the bite. Inconsiderable bite opening (within 2 mm) may be performed

in one stage; bite is opened more in two stages to avoid undesirable reaction of the joint and masticatory muscles;

- bite opening should not violate multiple contacts of the preserved teeth, because the teeth keeping the inter-alveolar occlusion height are in the state of functional overload;

- if bite is opened on 2-3 teeth, which have antagonists, they are to be joined with crowns soldered together. To prevent functional overload of the teeth keeping occlusion height, removable and fixed dentures are fixed simultaneously.

The orthodontic method of correcting the occlusal surface of the dental arches is more sparing. Nevertheless, it has disadvantages, particularly considerable duration of treatment, which conditions certain difficulties and inconveniences. This method consists in using dentures with high teeth or with a biting plate – with their help elongated teeth get significantly bigger load than the one exerted by natural antagonists. As a result of functional load of the abutment apparatus there takes place alveolar process rearrangement, which leads to teeth shortening and leveling of the occlusal surface of the dental arches in a varying degree. One should avoid significant bite opening not to cause discomfort and pain in the masticatory muscles, and also tissues under the denture. One uses a biting plate first for myostatic reflex rearrangement. Bite is opened by the height equal to such in the state of physiological rest, i.e. the muscle fibers stretch, their tone increases, pressure on the teeth becomes stronger, rearrangement is accelerated. Myotatic reflex initiates impulses arising in the receptors located directly in the masticatory muscles and their tendons. When muscles stretch, these receptors are irritated, which leads to reflex contraction of the former. The greater stretching, the greater contraction of the muscle fibers. As bite continues opening, the bony bars of the spongy substance are thinning and rearranging in the bone of the alveolar process.

Simultaneously with rearrangement the alveolar process is becoming longer, changes are observed in the periodontium. Teeth advance toward each other, i.e. the processes are the same as in the situation of the loss of natural opposing teeth. In this case appropriate rearrangement is observed in the alveolar process. In some time natural antagonists come in contact. In 2-3 weeks one again opens bite on the advanced teeth with the help of self-hardening plastics. One repeats these actions until the occlusal surface is corrected to the extent when efficient prosthetics is possible. A removable denture with occlusal plates may be used if there are bounded defects for introduction of one or two teeth.

Shortening of one or two teeth may be achieved by using a fixed dental bridge. Unlike usual dental bridges the abutment teeth are not prepared, and the intermediate part is a fastener for plastic, which consists of a couple of links corresponding to the number of missing teeth.

The denture includes two crowns and a perforated intermediate part, on which plastic is fixed. After dental bridge mounting the natural teeth first contact with the plastic. Later on bite opening is implemented due to layering of self-hardening plastics on the artificial teeth. Thus, bite opening can be repeated

without removing the denture. In order to avoid undesirable impaction of the abutment teeth their number should be increased. The number of impacted teeth should at least double. Duration of occlusal surface correction is influenced by many factors, particularly the degree of teeth displacement, which damages the occlusal surface, their number, condition of the periodontium, patient's age and general condition. Therefore duration of such treatment may be different: on the upper jaw it makes 4-6 months on average, on the lower one – 10-12 months. The younger the patient, the easier and quicker alveolar process rearrangement is.

M.V. Sviridov (1980), R. Crum, G. Andreasan (1974) offer using clasp laminar dental bridges to impact advanced teeth and create space for the future denture. The authors believe that treatment success depends on the age, general condition, psychoemotional reaction of the patient and condition of the periodontium.

ELIMINATION OF MESIODISTAL OCCLUSAL SURFACE DEFORMITIES

Thus, for distal replacement of teeth K.A. Kalamkarov (1967) offers to use a removable appliance containing a metal crown fixed on the last molar and a plastic shield for all teeth of the jaw. One solders horizontal tubes at the level of the equator to the oral and vestibular sides of the crown, and also to the plastic shield and to the teeth which are to be dislocated. Then one inserts bow-shaped threaded rods with an adjusting nut into the tubes. In a day the nut is tuned halfway to contract the arch.

If the teeth are inclined or displaced, before prosthetics one must conduct orthodontic preparation, which is carried out with the help of removable appliances with screws and springs. I.B. Tril offered a number of orthodontic appliances for teeth replacement in different directions. A device for teeth leveling and displacement in the mesio-distal direction includes a plastic basis, an active orthodontic element – a screw, fixing elements in the form of a multi-link clasp.

An appliance of this construction was used to level molars and premolars, which displaced to the side of the dental arch defect, and also to displace lateral teeth by 1-3 mm. An appliance-denture for leveling the teeth, which are inclined sagittal, consists of a plastic basis, an active orthodontic element in the form of a

zigzag activator, and an abutmentholding clasp. A DAD is replaced with artificial teeth in the appliance, which defines it as an appliance-denture.

An appliance-denture is used for displacement of the frontal teeth and premolars.

This group of appliances includes an orthodontic appliance displacing inclined teeth in the lateral part on the upper and lower jaws. An orthodontic appliance, which displaces an inclined tooth, contains cast semirings with occlusal plates, which are joined with inlays of an extensible screw without soldering. The efficiency of this appliance is provided by high precision of the cast constructions of the fixing elements, rigidity of connection with the mechanical source of screw force.

Cast constructions of the fixing elements of the appliance are much stronger

than the stamped or soldered ones due to their rigid connection. This, in its turn, provides more reliable transfer of the force developed by the screw necessary to level the inclined teeth. The orthodontic appliance is fixed in the DAD with the help of semirings (3-4 mm wide) on the teeth limiting the defect (convergent), and cover the tooth from the vestibular, palatine, and approximal sides.

The occlusal plates play the role of appliance attachments on the teeth preventing its advancement to the gums. Their configuration and sizes repeat the anatomical form of abutment teeth fissures.

Another important orthodontic appliance of this group is a whole cast appliance-denture.

It contains abutment rings (crowns), a rod, which begins from the approximal surface of the ring (crown) in the horizontal plane and goes into the opening of the tube, modeled in a unit-cast crown (facet) of the intermediate part of the appliance-denture.

On the vestibular surfaces of the abutment elements one can find bulges with openings. The latter are directed parallel to screw motion and are intended for the fixation of the elastic activator. The appliance-denture is used in the following way. The abutment elements are applied on the teeth in such a way that the rod goes into the tube.

The elastic activator is used to dislocate the tooth in case of its displacement to the DAD. The ends of the activator are squeezed and inserted into the opening.

Thus, a whole cast appliance-denture provides a preventive trend in prosthetic dentistry being simultaneously a denture replacing DADs and a means of treating dento-gnathic deformities, conditioned by teeth inclination.

Such constructions of orthodontic appliances provide elimination of dento-gnathic deformities and create optimal conditions for efficient prosthetics.

Besides, one can use braces, fixed orthodontic appliances with unilateral screws for distalization of teeth, and other devices.

ELIMINATION OF VESTIBUL00RAL OCCLUSAL SURFACE DEFORMITIES

Congenital pathology is one of the causes of severe forms of dento-gnathic deformities and DADs. Orthodontic preparation is one of the main techniques of such patients' rehabilitation.

To displace inclined masticatory teeth on the buccal side V.M. Musevych (1971) and Z. Jaworski (1978) offer a unilateral shield for healthy molars. On the buccal side of the shield there are pushers made of wire, they reach the tooth which is to be displaced.

Metallic crowns are mounted on the displaced teeth, which have retention points on their lingual surface. For this purpose one solders two parallel horizontal wire bars to the crown.

Simultaneously with teeth displacement to the side of the defect and a change of the axial inclination caused by untimely correction of the defect one frequently observes violations of the occlusal surface of struction of an appliance for elimination of this pathology. The appliance consists of a plastic basis, an

active element – a double-arm spring activator and a fixing compound clasp. The appliance was used to level the inclination of teeth in the vestibular or oral direction on the upper and lower jaws.

This group also includes an appliance for leveling orally inclined teeth. The appliance consists of a plastic basis, an active orthodontic element—an elastic bar fixed in the appliance basis, and a metal crown on the inclined tooth with a loop on the vestibular surface; the fixing elements are made in the form of plastic bandages.

The indicated appliance was used to level axial inclinations of teeth to the oral side with torsion on the upper and lower jaws. The location of the loop on the metallic crown was determined by the direction of the axis of inclined tooth displacement.

If DADs are untimely corrected, the teeth excluded from functioning due to loss of antagonists may acquire anomalous location; besides, there develop occlusion anomalies.

Thus, purposeful orthodontic preparation for prosthetics in complicated DADs in children is very important not only concerning the choice of efficient constructions of future dentures as it provides their functional adequacy, but also concerning provision of quick adaptation to the dentures, normalization of the masticatory function, speech, work of the muscles, temporomandibular joints, normal appearance of patients.

PREPARATION OF THE ORAL CAVITY FOR PROSTHETICS

Leveling of the occlusal surface of the dental arches caused by tooth height reduction. Shortening of advanced teeth refers to the most affordable methods of correcting the occlusal surface of the dental arches. It is indicated when a deformity cannot be corrected by means of an orthodontic technique, e.g. the patient does not want to wear an orthodontic appliance for a long time. To solve the question of teeth shortening extent it is advisable, as well as in bite opening, to examine diagnostic models plastered in the articulator. This technique can be applied with pulp amputation, i.e. devitalization, or without it. Preparation without tooth pulp removal under anesthesia is mainly indicated in adults, which is conditioned by greater thickness of the hard tissues due to secondary dentin deposit. However, forced devitalization of intact teeth is also more justified in people of mature age, because periodontal complications develop in them less frequently. Forced pulp devitalization at young age should be carried out only according to strict indications. One should take into account the functional value of the teeth and patient's age before deciding if to conduct devitalization.

One can level the occlusal surface not only in case of vertical, but also mesiodistal displacement of teeth by means of preparation. Grinding of the medial surface of the teeth (molars), inclined to the side of the defect, without pulp amputation is possible only if one can remove a thin layer of dentin. In senior people the dental cavity sometimes narrows to such an extent that the pulp is preserved in the form of a threadlike formation or disappears completely. In such cases one can remove a thicker layer of dentin. After considerable shortening the

teeth are to be crowned.

Thus, correction of occlusal surface deformities caused by teeth height reduction without pulp removal is indicated in case of feebly marked displacement – both vertical and mesiodistal. When the doctor decides to devitalize a tooth, he must take into account, as has been mentioned above, the functional value of the tooth. The tooth pulp is removed under strict observance of aseptic regulations with further thorough filling of the root canals to avoid formation of chronic inflammation foci close to the roots apices.

Some authors recommend refusing from wide application of dental bridges if DADs are complicated by dento-gnathic deformities due to their negative influence on the abutment teeth and oral mucosa, and others offer making these very dentures of different constructions.

In case of a distally located abutment tooth and absence of vertical displacement of teeth-antagonists one uses dental bridges of standard construction with extensive grinding of teeth, which converge after removal of their pulp (V.N. Banuk, 1981; J.Rakosi, 1980).

To replace DADs complicated by axial inclination of the abutment teeth Z. Y. Schur, (1962), V.V. Kamenev (1970), J.A. Hood, I.W. Paroh, R.Q. Craig (1975) offered demountable constructions of dental bridges and worked to improve them.

I.I.Tulbovyh (1972), Y.M. Adigezalov (1973) use convergent teeth for fixed dentures equator crowns, thus decreasing the volume of preparation.

Diversity of deformities not infrequently complicates efficient prosthetics, and in most cases – hampers it. As a result, there have been developed many ways of eliminating occlusal surface damage caused by teeth displacement, and the doctor is to choose the most adequate and efficient one for his patient.

SURGICAL PREPARATION OF THE ORAL CAVITY FOR PROSTHETICS

Except for general health promotion measures one conducts special preparation right after oral cavity sanitation. Such special preparation is conditioned by the technique of prosthetics. Thus, for example, when DADs are replaced with dental bridges, there is no need to remove a pronounced palatine torus or exostoses, and during prosthetics of toothless jaws with removable dentures this operation is often necessary.

Special measures of preparation for prosthetics are necessary to solve many problems. In some cases they facilitate the process of prosthetics (for instance, microstomia elimination), in other cases they create conditions for better denture fixation (oral vestibule deepening).

Surgical methods of treatment may be used both independently and in combination with the apparatus method of dento-gnathic pathology treatment. The main factor, which accelerates bony tissue rearrangement, is the intensity of fermentation processes that develop after bone affection.

In pronounced deformities or maldevelopments of the dental arches, jaws and occlusion violations it is not always possible to treat the patient by means of orthodontic techniques only. In such cases the surgical methods may be auxiliary

or main, which allows achieving lasting results.

Surgical techniques applied in the course of dento-gnathic anomalies treatment can be divided into the following groups:

- on the soft tissues – plastic surgery of the short lingual frenulum; dislocation of the place of lip frenulum attachment (of the upper or lower lip); plastic surgery in the region of mucosal bands; oral vestibule deepening; leveling of the supramental skin fold;
- on the teeth and dental arches – exposure of the retained tooth crown; separation of conjoined teeth, single-stage tooth torsion; tooth replantation and transplantation; extraction of accessory teeth;
- on the alveolar process – compact osteotomy (the most widespread types – linear, tunnel, latticed);
- on the jaws – osteotomy and osteoectomy.

Surgical operations aimed to decrease the term of teeth displacement have been used for a long time. However, treatment results were not always satisfactory.

Surgical technique developed together with surgical methods. In 1958 A.A. Limberg offered complete decortication of the jaw area. Still, this technique needs to be improved because of difficulties accompanying its implementation and frequent injuries.

H. Kole (1960) performed corticotomy of the interventricular walls of the alveolar process of the anterior part of the upper jaw. The author based the method on weakening the integrity of the most stable layer of the bone – compact substance.

Y.L. Kiriya (1970, 1973), A.T. Titova (1975) for teeth replacement used lattice compact osteotomy above their roots, and also between and along their fossae.

A.N. Zaytsev (1978) recommends to weaken the compact bone with a special instrument by the technique of puncturing.

To demineralize the compact layer of the bone V.P. Nespriadko (1971) resorted to linear compact osteotomy. According to the author, a bone trauma causes proliferative inflammation on the periphery of the alteration zone, the compact bone loses its usual structure, demineralizes, which facilitates tooth displacement. The author believes that the presence of a zone of active structural rearrangement of the bone at a large distance from the region of alteration may serve as a basis for the application of less traumatic techniques in some cases.

Some authors offer forced single-stage teeth displacement (S.I. Kryshchuk, A. D. Mukhina, Z.F. Vasilevskaya, 1980; K. Sohlmdt, 1978). It has been experimentally proved that during tooth displacement the ligamentous apparatus is the first to be violated, there is observed considerable tooth mobility, but the neurovascular bundle does not suffer in this case. During the first 10 days there is observed pulp hyperemia, afterwards it normalizes. Boundaries of the pocket epithelium on the side of the rupture restore in 5 days (I.F. Khoche, R.A. Montell, 1978).

A.I. Pogodina analyzed the studies of “redressement force” technique

effectiveness and arrived at a conclusion that under certain circumstances it is a method of choice because such treatment on average requires a month and a half instead of one year needed for apparatus treatment; relapses are not observed.

To create conditions for prosthetics some authors offer extensive grinding of the masticatory surface (sometimes of the greater part of the tooth crown after pulp removal) or tooth extraction, which would promote efficient denture making (M.M. Makhiv, 1970; V.V. Banukh, 1981).

Surgical methods help to reduce orthodontic treatment duration, change the position of the teeth not subject to displacement, especially in adult patients, exclude relapses.

If there is observed pronounced hypertrophy of the alveolar process, one should resort to partial resection of the tooth simultaneously with its extraction.

COMBINED PREPARATION OF THE ORAL CAVITY FOR PROSTHETICS

It should be noted that one does not always succeed in correcting the occlusal surface of the dental arches by means of one of the methods described above. The problem of reducing orthodontic treatment duration has bothered doctors for a long time. To solve it, there have been developed different methods of influencing the teeth and adjacent tissues.

Appliance-surgical method of correcting the occlusal surface of the dental arches. The complexity and duration of DADs correction by means of orthodontic appliances with bite plates or occlusal rests and dentures that open bite induced search for methods of its acceleration. The compact part of the bone is known to be the least pliable. To weaken it one resorts to surgical intervention on the alveolar process – compact osteotomy, i.e. one makes holes in the external cortical plate chequerwise.

A bite plate is fixed in 5-7 days after the operation, and a bite denture – in 3 weeks.

The main factor accelerating bony tissue rearrangement is the intensity of fermentation processes, which develop after bone affection.

When one uses dosed vacuum, intensive biochemical processes develop in the tissues increasing the mitotic activity (V.I. Kulazhenko, 1965). L.V. Sorokina (1974) studied the influence of vacuum on the mucous tunic of the palate and adjacent bone and determined that the processes taking place in the tissues are similar to the changes observed during surgical interventions. There are found only quantitative differences because fermentation processes activity increases during vacuum application.

Ultrasound has evident local influence on the mineral component of the bony tissue (R.D. Novoselova, A.N. Chumakova, 1983).

Recently the method of vibration stimulation has been widely used. Cr.H. Kurz (1976,1980), H.I. Liutik (1985), I.B. Tril (1988), S.I. Doroshenko (1992), N.V. Rashchenko (1995) report that vibration stimulation increases interstitial pressure in the periodontium and bony tissue; pressure decreases when stimulation ceases. Alternation of high and low pressure in the periodontal fissure and adjacent tissues produces a pump effect: suction of the blood and interstitial fluid into the

indicated zone, and then its displacement during each cycle. Authors believe that this increases cellular activity around the tooth and, consequently, the number of osteoblasts and osteoclasts, and also weakens the fibrous elements of the periodontal tissues.

According to S.I. Doroshenko (1991), who thoroughly studied the influence of vibration on the hard dental tissues and pulp, vibration stimulation has no negative influence on the displaced teeth at the ultrastructural level.

In the pulp of the teeth under study right after five-minute influence odontoblasts of the peripheral parts, located in the lower third of the tooth crown and cervix, were loosened in some areas. Lateral processes of odontoblastic cells were distorted in these zones, long processes preserved their clear linearity. In the indicated zones cells not infrequently lost their pear-shaped form, basophilic coloring reduced in some areas in the cytoplasm. These changes refer to disturbances arising in insignificant irritation of the parenchymatous elements and are reversible.

In the intermediate and central layers of the pulp there are observed zones of clarification and insignificant loosening of both fibrous and cellular stromal elements. In these very zones there was found focal hyperemia of small blood vessels like capillaries and arterioles. In some areas in the lumens of such vessels there was noted erythrocyte aggregation, but no signs of their homogenization or lysis were noted. Morphological signs of vascular wall integrity violation and running of blood corpuscles out of its space were not observed. No aberrations were detected in the structural components of the enamel and dentin. On the 3rd day after vibration the noted changes did not progress. Microcirculation and blood supply of the intermediate and central layers of the pulp were close to normal. No rheological disturbances were found in the microvessels. In ten days there was noted normalization of the trophism of different structures of the displaced tooth. In the marginal parts of the pulp there remained a cluster of the so-called free cells, which, according to modern data, are precursors of odontoblasts. The number of macrophages and histiocytes in the central zones of the pulp is much greater than under normal conditions. Morphological peculiarities of changes are prolonged – they are preserved up to 10 days.

Thus, the author proved that low-frequency vibration does not condition significant changes in the hard dental tissues and pulp. Vibration influence, like “micromassage”, causes reverse changes and promotes an increase of trophism of all the pulp zones, and also activation of immunocompetent cells providing local immunity.

All methods of intensification are always combined with appliances use, which allows reducing the duration of orthodontic preparation of patients for efficient prosthetics.

Materials for self-control:

A. Tasks for self-control (tables, diagrams, drawings, graphs):

- to sketch in the album the drawings with partial and complete removable

dentures.

B. Tasks for self-control:

1. In the clinic of orthodontics addressed the parents of 5-year-old child with complaints of the absence of the lower lateral teeth, slow mastication. From the anamnesis: the temporary lower molars have been removed with regard to complicated caries at 3 years. Objectively: the lower third of the face shortened, supramental fold is deep, the lower lip is slightly twisted, thickened. Absence of 85, 84, 74, 75. Signs of distal occlusion complicated with deep formation. What method of treatment is leading in the first stage?

prothetic

biological

instrumental

surgical

instrumental and surgical

2. The child of 6 years revealed the absence of all the upper molars. The lower incisors are in contact with the palate mucous membrane. Determine the tactics of doctor.

to make a removable partial denture for the upper and lower jaw

the medical intervention is not needed

to produce the orthodontic device to treat malocclusion

to observe every six months until the eruption of permanent teeth

to observe 1 year before the eruption of permanent teeth

3. The preventive examination of the child 10.5 years old revealed the absence of 53 and 63 teeth. The visible deviations in the development of the dentition is not revealed. Determine the tactics of doctor.

physiological change, medical intervention is not needed

to make a removable partial denture

to produce preventive maintainers

to observe every 3 months before the eruption of permanent teeth

to observe 1 year before the eruption of permanent teeth

4. The boy 5 years as a result of caries complications were removed second molars. For the treatment was made removable dentures. Through what period of time it is necessary to replace dentures?

after 0.5 years

after 1 year

after 1.5 years

after 2 years

after 2.5 years

5. In what period of time the physiological change milky teeth are considered to be prematurely deleted:

- a 1 year or more before physiological change
- a 2 months before the physiological change
- a 5 months before the physiological change
- a 7 months before the physiological change
- a 8 months before the physiological change

6. The preventive examination of the child 4.5 years revealed premature the absence of all the upper molars. The lower incisors are in contact with the mucous membrane of the palate. Determine the tactics of doctor?

- to make a removable partial denture
- to make orthodontic appliance for the deep bite treatment
- to observe one time in a year before the permanent teeth eruption
- to observe every six months until the permanent teeth eruption
- the intervention of a doctor is not necessary

7. What prosthesis design should be selected at the multiple adentia in the early period of mixed dentition?

- partial dentures
- bridges
- clasp dental prosthesis
- does not need prosthetics
- complete dentures

8. The child 12 years old no 31 and 41, the gap between the 32 and 42 - 10 mm. Choose a rational denture design of the prosthesis.

- sliding partial removable plate prosthesis
- maintainers
- clasp dental prosthesis
- bridge
- sliding mikro dentures

9. At what age recorded the highest number of dentition defects in children?

- 8 years
- 5 years
- 10 years
- 12 years
- 15 years

10. For some classification to determine the dentition defects in children?

- by Trill
- by Voznyuk
- by Kennedy
- by Agapov
- by Betel'man

11. What etiological factor contributes to the development of dentition defects in children?

dental caries

disorder of miodynamical balance

anomalies of soft tissues attachment

the degree of teeth roots formation

tongue parafunction

12. What method of treatment it is advisable to use in children in the mixed occlusion period in the treatment of the frontal dentition defect?

a removable partial denture

bridge denture with bilateral support

bridge denture with unilateral support

spacer

sliding bridge

13. What method of treatment should be used at the unilateral included defect in the lateral area with the loss of 2 teeth?

a removable partial denture

bridge denture with bilateral support

bridge denture with unilateral support

spacer

sliding bridge

14. What method of treatment should be used at the unilateral included defect in the lateral area with the loss of 3 teeth?

a removable partial denture

bridge denture with bilateral support

bridge denture with unilateral support

spacer

sliding bridge

15. What method of treatment should be used in the restoration of the bilateral included dentition defect in the posterior area when the loss of 3 teeth?

a removable partial denture

bridge denture with bilateral support

bridge denture with unilateral support

spacer

sliding bridge

16. The features of artificial teeth setting in frontal area in children removable prostheses are next:

without artificial gums

by dentoalveolar fixing
using vestibular arc
on artificial gums
with the help of a metal frame

17. Radlinsky modules include the repair of:
the lateral dentition defect
the frontal defect of the lower dental arch
the restoration of the defect in first permanent molars area
the frontal defect of the upper dental arch
the permanent lateral teeth defect

18. During preventive child 5 years old examination the first and second temporary lower left molars it was revealed. To determine the stage of the dentition destruction:

third
second
fourth
first
fifth

19. During preventive child 5 years old examination the first and second temporary lower left molars it was revealed. To choose the denture design for defects replacement.

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

20. In the clinical examination of 8 years old patient discovered a included defect in the left lower jaw area 74, 75. To determine the stage of dentition destruction:

third
second
fourth
first
fifth

21. In the clinical examination of 8 years old patient discovered a included defect in the left lower jaw area 74, 75. To choose the denture design for defect replacement:

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support

spacer
sliding bridge

22. An appointment to the orthodontist asked parents with a child 5 years with complaints of aesthetic defect. The diagnosis of mesial occlusion, and limit the defect of dentition on the upper jaw on both sides. No second temporary molars. To determine the stage of destruction of the dentition.

third
second
fourth
first
fifth

23. An appointment to the orthodontist asked parents with a child 5 years with complaints of aesthetic defect. The diagnosis of mesial occlusion, and limit the defect of dentition on the upper jaw on both sides. No second temporary molars. To determine the stage of destruction of the dentition. To choose the denture design for replacement of defects.

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

24. A child 8 years old with unilateral terminal lower jaw defect at the left side. 75,74 missing teeth. To determine the stage of dentition destruction.

third
second
fourth
first
fifth

25. A child 8 years old with unilateral terminal lower jaw defect at the left side. 75,74 missing teeth. To choose the denture design for defects replacement.

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

26. On reception to the doctor the orthodontist sent a child of 4 years in which the result of complicated caries removed 84 tooth. To determine the stage of dentition destruction:

third

second
fourth
first
fifth

27. On reception to the doctor the orthodontist sent a child of 4 years in which the result of complicated caries removed 85 tooth. What kind of denture you want to use in this case?

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

28. The clinic contacted the parents with a child 5 years with complaints of teeth absence in the lower jaw. Diagnosis 1 group of dentition defects by Demner-Lepihyn. To determine the stage of dentition destruction.

third
second
fourth
first
fifth

29. The clinic contacted the parents with a child 5 years with complaints of teeth absence in the lower jaw. Diagnosis 1 group of dentition defects by Demner-Lepihyn. To choose the denture design for defects replacement.

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

30. The clinic contacted the parents with 8 years old child with complaints of second temporary molars absence at the left side of mandible. The result is a mesial shift of first permanent molar. To choose the denture design for defects replacement.

spacer
bridge denture with bilateral support
bridge denture with unilateral support
partial removable denture
sliding bridge

31. As a result of operative intervention, the patient K., 13 years removed 13 and 14 teeth. To determine the stage of dentition destruction.

third
second
fourth
first
fifth

32. As a result of operative intervention, the patient K., 13 years removed 13 and 14 teeth. To choose the denture design for defects replacement .

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

33. The patient N. 10 years old determined the upper jaw dentition defect. The diagnosis: primary adentia of 12,22 teeth. To determine the stage of dentition destruction.

third
second
fourth
first
fifth

34. The patient N. 10 years old determined the upper jaw dentition defect. The diagnosis: primary adentia of 12,22 teeth. To choose the denture design for defects replacement.

a removable partial denture
bridge denture with bilateral support
bridge denture with unilateral support
spacer
sliding bridge

35. Patient K., 11 years old there has been a primary adentia 15 and 25 teeth. To determine the stage of dentition destruction.

third
second
fourth
first
fifth

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