

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 № 1	Organization of orthodontic care for children and teens with teeth and dentitions defects. Clinical and biological substantiation of children's prosthetics. Types of prosthetics in children with anomalies of individual teeth. Types of prosthetics in children with malocclusion class I by Angle.
Course	V
Faculty	Preparation of foreign students

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 the teeth crowns and 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 separate teeth defects.

To know the features of the separate teeth defects.

To know the algorithm for examining patients with the separate teeth defects.

To know the classification of the separate teeth defects.

To be able to diagnose different clinical forms of the separate teeth 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. Crown	Orthopedic appliance, microprosthetics, covering the crown part of the tooth or a separate part of the surface. Used to repair teeth defects that are not subject to less invasive treatments to change shape, position (rotation, dystopia), and color of teeth.
2. Inlays	Prostheses, which restore the anatomical shape of the tooth, filling the defect in its crown. The inlays are referred to as microprostheses and used to restore the shape and function of the crown part of the tooth, disrupted as a result of carious and non-carious lesions of the hard tissues of the teeth.

	Inlays are also used for locking fixation and as a support for fixed and removable dentures and splicing structures.
3. Pin crown-inlay	Is a permanent prosthesis that completely replaces the crown of the tooth and is strengthened in the root canal with a pin. This type of prosthesis is used for subtotal or complete destruction of the natural crown of the tooth, as an independent prosthesis, as well as for fixing non-removable prostheses, for example, bridges.

4.2. Theoretical questions to the lesson:

1. Name congenital and acquired causes of dental arch defects.
2. Substantiate the necessity of dental arch defects prosthetics in children.
3. Enumerate the functions of temporary and permanent teeth. Indicate if there any differences between them.
4. What teeth, temporary or permanent, perform more functions?
5. What dento-gnathic deformities may develop as a result of early loss of temporary teeth?
6. Who was the first to scientifically substantiate the necessity of pediatric dental prosthetics?
7. Why can't remaining teeth compensate the functions lost in children with dental arch defects?
8. Name classifications of dental crown defects in children.
9. What is the "total defect" of a tooth?
10. Name indications for making crowns.
11. What denture constructions replace tooth crown defects?
12. What classifications concern tooth crown defects?
13. Enumerate the main indications for application of standard metallic crowns.
14. Enumerate the main indications for application of celluloid caps during temporary teeth restoration.
15. What instruments are used to adjust standard crowns on temporary teeth?
16. Individual metallic crowns. Their advantages and stages of making.
17. Name the stages of making thin-walled individual crowns.
18. Alloys of what metals are used to make metallic crowns?
19. How can one make celluloid caps for temporary teeth restoration?
20. Name the classifications used in inlay production.
21. Enumerate indications for making inlays.
22. Substantiate advantages of inlays over fillings.
23. Enumerate indications for making Ilyina-Markosian's pin crowns.
24. Into what groups are inlays classified?
25. What materials are needed to make inlays?
26. Enumerate general indications and contraindications for making pin crowns.
27. Enumerate indications for making Richmond's pin crown.
28. Name the advantages of Katz' pin crown.

29. Describe Akhmedov's pin crown.

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

Identification of risk factors for development of separate teeth defects.

Definition of risk groups for development of separate teeth defects.

Determination of the prognosis of progenic occlusion.

Collect anamnesis of the disease of an orthopedic patient with defects in hard tissues of the tooth crown.

Describe and classify possible deviations from the norm in the dento-alveolar system with defects in the hard tissues of the crown of the tooth.

Correctly put the corresponding previous diagnosis for defects in hard tissues of the tooth crown.

The content of the topic:

*CLINICAL AND BIOLOGICAL GROUNDS OF PEDIATRIC
DENTAL PROSTHETICS.*

Prosthetics is part of routine sanitation of the oral cavity in children. Early extraction of temporary teeth violates the integrity of the dental arches conditioning changes of the masticatory function. At first these changes are adaptive, later they play the role of etiological factors in dento-gnathic deformity development. Defects of the teeth crowns and dental arches are rather important stomatological diseases. This is due to the peculiarities of the actively developing children's organism, imperfection of the dento-gnathic apparatus and other physiological systems. Among other things domestic health care concerns implementation of preventive measures directed at risk identification and elimination of dento-gnathic apparatus maldevelopments in different periods of occlusion.

Numerous factors provide the normal growth and development of children, among them correct formation of all the parts of the digestive tract and, particularly, masticatory apparatus, whose functioning largely depends on the preservation of the integrity of temporary and permanent teeth. Correct growth and formation of the dento-gnathic apparatus are influenced by three main factors:

1. Biological tendency to growth.
2. Teething.
3. Masticatory function.

Many dentists often underrate the role of temporary teeth. Still, these teeth play an important role not only in the correct development of the dento-gnathic apparatus, but also in provision of the growth and development of a child in whole.

Functions of temporary teeth:

- biting and chewing;
- esthetic;
- phonetic;
- articulatory;
- swallowing;
- respiratory.

Besides, temporary teeth provide:

- stimulation of jaw growth;
- stimulation of teething;
- bite formation;
- formation of the physiological occlusion height;
- correct development of the muscular system;
- development and differentiation of elements of the temporomandibular joints.

One should preserve temporary teeth in children because they play an important role in the process of occlusion height formation, in the correct development of dental arches, in the provision of normal development of the jaws, timely eruption and correct location of permanent teeth in the alveolar process, normal development of speech, functions of mastication and swallowing, and in prevention of secondary dento-gnathic deformities in the form of dental arch shortening, dentoalveolar lengthening, displacement of the teeth limiting the defect, and also in the prophylaxis of intraosseous displacement of permanent teeth germs, which violates the process of age-related differentiation of elements of the temporomandibular joints, functional morphological changes, prevents the formation of favorable conditions for the correct formation of the masticatory apparatus: there develops retention, some teeth change their location, pathological occlusion is formed.

CAUSES OF TEETH AND DENTAL ARCH DEFECTS

Having examined 200 children aged 2 to 5 years and 500 children aged 6 to 16 years from Kyiv nurseries and schools V.P. Vozniuk established that in the period of temporary occlusion the teeth of children aged 3-4 years were most affected by caries. Caries affection of permanent teeth in transitional occlusion increases gradually in children aged 8 to 10 years. Caries affection of permanent teeth in children at the age of 12-14 years is practically identical, and after 15 years it increases considerably. One may observe complete destruction of the crown part of temporary teeth already in 2-year-old children. The majority of completely destroyed teeth are observed in children aged 5-6 years. This also concerns premature extraction of temporary teeth in children of this age. The cited data testify to the fact that 5-6-year-old children are the most susceptible to caries and its complications. Complete destruction of temporary teeth and their premature extraction, if teeth and dental arch defects are replaced untimely, will promote the development of dento-gnathic deformities, i.e. dental arch shortening, lack of space for permanent teeth eruption and their abnormal location, and also deformities of inter-occlusal relations. Complete destruction of the crowns of permanent teeth is already observed in 10-year-old children and is the most intensive in 16-year-old teenagers. This also concerns early extraction of these teeth. It has been found out that despite all the preventive measures aimed at reduction of stomatological diseases incidence among children, caries affection of the teeth and the number of its complications still remain rather high.

There have been developed theoretical and biological grounds of early orthopedic therapy, which allows preventing the development of defects of the teeth crowns and dental arches, and if they develop – eliminating them, i.e. restoring the

function of the masticatory apparatus and consequently providing favorable conditions for the growth and development of the dentomaxillofacial skeleton (L.V. Ilyina-Markosian, 1946; Y.N. Aleksandrova, 1960; A.I. Betelman et al., 1972; K.A. Kalamkarov et al., 1974, 1979; Y.I. Gavrilov, I.M. Oksman, 1978; L.D. Chuchmay, 1967; R.M. Varava, D.M. Strelkovskiy, 1979; F.Y. Khoroshilkina, 1980; T.V. Sharova, 1981; Y.I. Gavrilov, 1984; Y.Y. Simanovskaya, T.V. Sharova, 1982; K.N. Shamsiyev, 1985; L.I. Khikhashvili, 1987; S.I. Tril, 1992 and others). Timely stomatological care provided to children with DADs prevents the development of functional and morphological changes, creates favorable conditions for the correct formation of the masticatory apparatus and provides prophylaxis of children's organism diseases.

TEETH DEFECTS DIAGNOSTICS

To diagnose defects of the dental crowns different classifications have been offered (Black, M.B. Bushan), which are mostly used in preventive dentistry. Y.V. Milikevych recommended defining the index of destruction of the occlusal surface of the tooth in the period of permanent occlusion. V.S. Kurylenko developed a classification which is closer to the prosthetics of dental defects in children, but it does not include the degree of tooth roots formation or resorption in children. Clinical trials have shown that dental crown defects of different etiology in children are already found at early stages of dento-gnathic apparatus formation, i.e. still in the period of temporary occlusion, therefore they require urgent orthopedic treatment. When one chooses denture construction to restore a defect of the crown of a temporary (milk) tooth, one should find not only its cause but also the degree of destruction, the state of the root system (i.e. the degree of root formation or resorption), and also the ability of the tooth to withstand a functional load, i.e. one should conduct thorough differential diagnostics to make a final diagnosis. Such an approach is important in the diagnostic process in the period of both temporary and permanent occlusion, and especially in the period of transitional dentition, when temporary and permanent teeth with different conditions of the root system are found in the dental arch simultaneously. V.P. Vozniuk offered a classification of dental crown defects in children on the basis of epidemiological research and clinical observations.

It takes into consideration the following diagnostic criteria:

first of all temporary (I) or permanent (II) teeth are determined;
 then condition of the pulp: teeth with the vital pulp (1) or devitalized pulp (2);
 condition of the roots: without root resorption (A), with root resorption (B) – by 1/3 (a), by 2/3 (b), by 3/3 (c); with a formed root (C), with an unformed root (D): by 1/3 (a), by 2/3 (b). According to topography and localization (III): on the upper jaw (IIIA), on the lower jaw (IIIB), lateral teeth (1), frontal teeth (2). In its turn, one classifies the localization of the defect on the lateral teeth (1) on the masticatory surface (a), approximal surface (b), masticatory approximal surface (c), atypical location (d), total defect (e); defects on the frontal teeth: cutting edge (a), approximal surface (b), cutting approximal surface (c), atypical location (d), total defect (e). According to etiology (IV): caries (a), trauma (b), anomaly of the structure of the hard tooth tissues (c), anomaly of the form (d), if the tooth is worn down (e).

The indicated classification broadly covers the main diagnostic criteria, which considerably facilitates differential diagnostics of dental crown defects in children and helps the doctor not only in diagnostics but also in the choice of the most efficient denture construction.

To detect the functional adequacy of a tooth and its ability to withstand a certain functional load it is important for clinicians to have an idea not only of the condition of the tooth crown but also of the tooth root and not only of the hard tissues but also of the pulp. These diagnostic criteria are very important when it concerns the choice of treatment method and expedient denture construction, especially in children. Besides, functional capacity of some teeth depends on the form and size of their masticatory surface, anatomical integrity, number and height of tubercles, number and size of roots, degree of their formation and resorption, structure of the alveolar walls, condition of the parodontal tissues, location of the tooth in the dental arch and reactivity of the organism, especially of a child's one. During mastication the teeth render functional irritation to the periodontium, as a result there is created tension, which under normal conditions is adequate to the pressure force. Nevertheless, during mastication the force of masticating pressure is not used completely – only its part in the form of pressure during biting and mastication of food. Teeth of children of one and the same age have a certain physiological limit of endurance, which is unstable. The methods of masticatory efficiency determination according to masticatory factors, where the pressure of the weakest tooth – the lateral upper incisor – is taken as a unit of measure, are somewhat empirical and meant for a certain age group of the examined, i.e. adults, whose dento-gnathic apparatus is already formed. Besides, they are based on static (stable) landmarks and interfere with the study of the process dynamics. S.I. Tril and V.P. Vozniuk were the first in the practice of pediatric dental prosthetics to use gnathotensodynamometer to find the degree of functional disorders in children with teeth and dental arch defects. Investigation of masticatory endurance is based on the anatomico-functional age-related peculiarities of each tooth separately and the dento-gnathic apparatus in whole. The findings are of practical importance and may underlie indications for dental prosthetics. Taking into consideration the fact that the children's dento-gnathic apparatus is still forming, the ability of the dental tissues and periodontium in whole to endure a certain load, especially vertically, should be considered an important and objective test determining the functional adequacy of teeth at a certain stage of functioning. Thus, dental defects in children have certain peculiarities, which predetermines the need of weighed approach to differential diagnostics and choosing efficient constructions of dentures taking into account the age of the child, the degree and causes of tooth crown destruction, the condition of the root system, the number of damaged teeth.

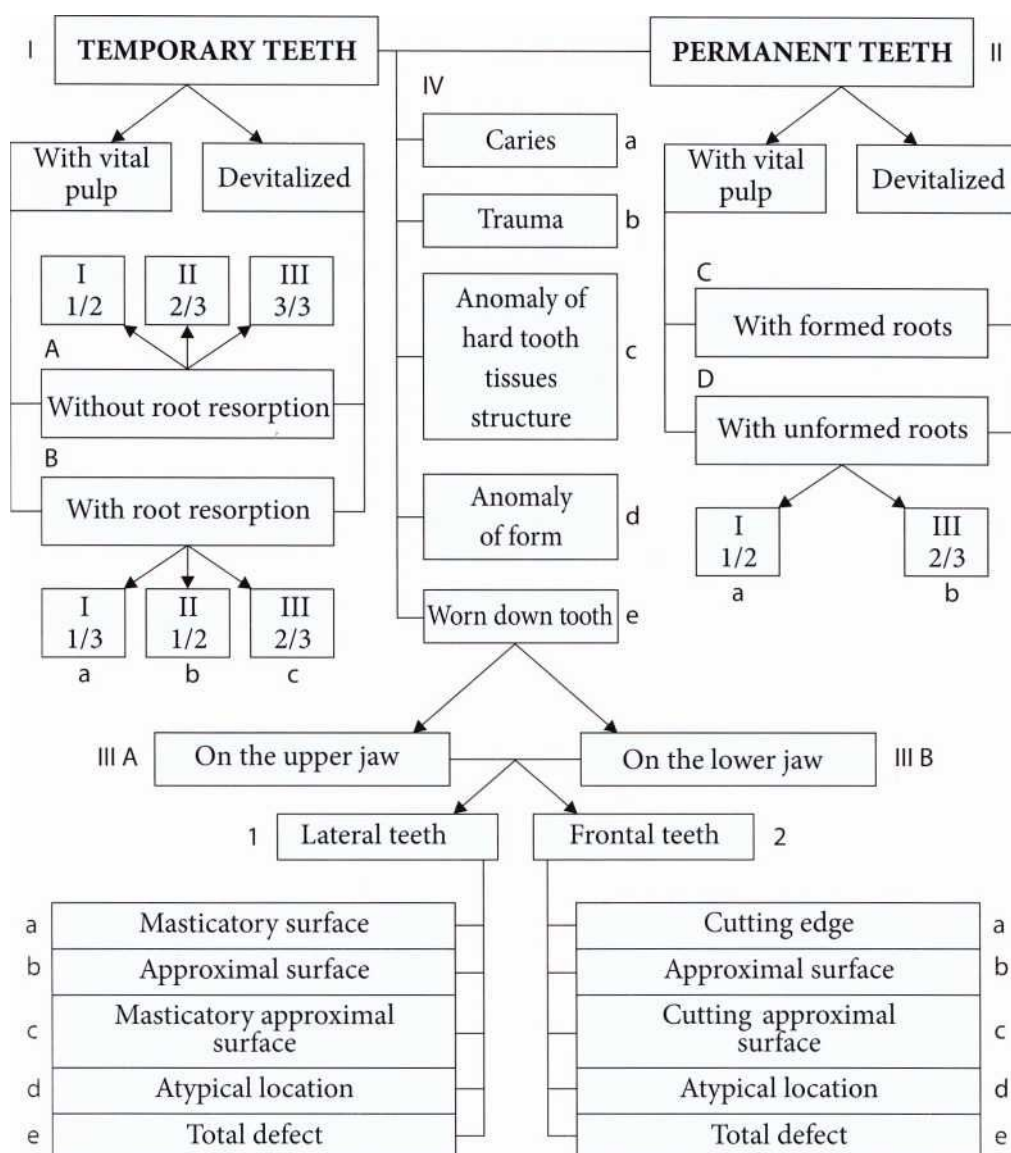


Diagram. Classification of tooth crown defects

PROSTHETICS OF TEETH DEFECTS IN TEMPORARY OCCLUSION

Dental crown defects of different etiology are the earliest and most widespread form of dento-gnathic apparatus disorders. The main technique of their elimination is filling. Nevertheless, according to domestic and foreign literature, it cannot qualitatively and permanently solve the problem of restoring the form and function of teeth, especially in case of considerable destruction of teeth crowns. Overwhelming majority of clinicians prefer inlays in these cases. Nevertheless, opinions vary on their efficiency, indications and contraindications for their application. Any filling or inlay should restore esthetic norms, strengthen the residual structure of the tooth, resist destructive load. Compliance with these requirements is possible in case of correct modelling of the occlusal surface of inlays. To analyze the type of occlusal surfaces and direction of the action of masticatory load one uses mechanical models of the systems “antagonist–masticating pressure–occlusal plane–cement–tooth structure”. Inlays for replacement of teeth crown defects are made of different materials: metal alloys, porcelain, plastic. Vast majority of scientific investigations

are dedicated to the development and improvement of inlays in adults. In pediatric practice inlays are used less frequently to replace teeth crown defects. In children preparation of a dental cavity for an inlay is to be carried out carefully trying to preserve as much hard tissue as possible. The most acceptable classification of cavities for inlays in pediatric practice was developed by D.N. Tsytrin.

The upper frontal teeth and first molars are more frequently destroyed in children than in adults. Inlays are indicated to replace these defects. Not infrequently traumas cause breaking off of the cutting edge or an angle of the frontal teeth. It is difficult to restore the form of a tooth angle with filling material; the filling is unstable in this case. Inlays are more appropriate, nevertheless, their stability should also be provided, because during biting of food the frontal teeth are exposed to increased lateral load. One should deliberately choose inlay construction and prepare the dental cavity. Inlays are the most perfect method of treating destroyed teeth because they allow restoring the anatomical form and function of teeth not injuring the adjacent tissues. To determine tooth crown defect in children one is recommended to use the simplest and most comfortable classification offered by V.S. Kurylenko.

In temporary teeth specialists recommend to eliminate only the defects, which developed in median caries. Nevertheless, they can be rather successfully replaced with a filling of high quality with the least psychological impact on the child and considerable saving of working time of the dentist and dental technician.

Teeth with partial defects of temporary teeth crowns of a rather considerable area, which are observed in circular caries, systemic hypoplasia or enamel aplasia, in the presence of a couple of carious cavities in one crown, pathological wearing off of temporary teeth are to be covered with thin-walled metallic crowns.

Thin-walled metallic crowns are made without temporary teeth preparation, therefore the relief of their masticatory surface does not change, as a result the fissure-tubercle contact with the opposing teeth is preserved. This provides adequate distribution and transfer of masticating pressure, children quickly get used to the artificial crown, there are no changes in the periodontium; in such a case germs of permanent teeth develop normally and the process of temporary teeth roots resorption is not violated. Such crowns allow preserving the functional value of temporary teeth until second dentition, which will positively influence the growth of the jaw bones, development and timely eruption of permanent teeth and their correct articulation correlation.

The approach of orthopedic treatment of temporary teeth in case of considerable or complete destruction of their crown part depends on the condition of crowns and terms of second dentition. If the root system is stable (incomplete root formation, complete root formation, inconsiderable resorption of the apical part of the root by $\frac{1}{3}$ of its length) and the terms of second dentition are remote (from 1.5 to 4 years), one can use thin-walled metallic crowns to replace partial defects of the crowns of teeth with removed pulp, but after therapeutic treatment.

To replace major temporary teeth crown defects of carious origin there have been offered standard metallic crowns made of nickel-chrome alloy. Such crowns can provide protection against further destruction of thin and brittle dental tissues preserved after treatment of complicated caries until they are replaced by permanent

teeth. The technique of crowning a tooth with a standard metallic crown is simple and requires much less time than restoration. Standard metallic crowns do not influence the physiological replacement of temporary molars: the teeth fall out together with the crowns. Industrially produced metallic crowns are well-known in Great Britain and European countries (3M Dental, Loughborough, UK). Clinical trials proved the effectiveness and expedience of their application. A crown made of nickel-chrome alloy, i.e. a standard metallic crown, is an optimal method of restoring considerable carious impairment of temporary teeth. Restoration should meet certain requirements. Ideally, it should have a service life period corresponding to the terms of second dentition and provide protection of hard tooth tissues. Investigation of the service life of amalgam fillings in temporary teeth showed that many of them require replacement before second dentition. Metallic crowns rarely require replacement unlike fillings made of amalgam, composite materials, glass ionomer cements. Standard metallic crowns not only completely cover teeth crowns weakened by extensive odontic preparation, but also provide protection from possible recurrence of the disease of such teeth, especially in children running a high risk of caries.

The technique of crowning teeth with standard metallic crowns is simple and requires less time than teeth restoration. Contemporary standard crowns are so well constructed that do not require substantial undercutting and fitting before crowning, and tooth preparation is minimal and quick. Special literature provides no information on the use of post constructions in case of complete destruction of temporary teeth crowns. Only L.V. Ilyina-Markosian offers to use a pulp cavity to fix inlays in teeth with removed pulp and make the dental cavity of squared shape proceeding in the form of a short canal in the root orifice.

Temporary occlusion is an important period of dento-gnathic apparatus development, which consists of three main stages: formation, stabilization and “wearing-out”, or “aging”, i.e. preparation for permanent teeth eruption. Each of these stages has its morphological and functional peculiarities, which should be considered in the course of orthopedic treatment. In the period of temporary occlusion there takes place the first stage of occlusion height establishment, which finishes with eruption of the last molars, therefore only preservation of all temporary teeth allows keeping occlusion height at the appropriate level. The root system of teeth at the stage of temporary occlusion formation also undergoes a number of changes: from formation to resorption of roots, which should be taken into account when one chooses denture construction, because in each particular case the force of pain induction (VPD) in the tooth, i.e. its ability to endure maximum load, will be different. The period of temporary occlusion is characterized by certain occlusal correlation of the dental arches – in one horizontal plane. Nevertheless, interocclusal contacts also undergo certain changes. There develop tremas and diastemas between teeth as a sign of more active growth of jaws, which leads to alteration of occlusal contacts and physiological wearing out of teeth. The latter promotes medial displacement of the lower jaw, in consequence of what occlusion changes from orthognathic to straight. In this period rearrangement of the temporomandibular joints is more active, myodynamic balance of the masticatory muscles improves, sound articulation, i.e. speech function, is actively formed. Only under the condition of

temporary teeth integrity the above mentioned processes take a physiological course. In this regard preservation of temporary teeth, even decayed ones, is very important for further formation of the dento-gnathic apparatus.

If a tooth crown is completely destroyed, which is observed even in 2-year-old children, V.P. Vozniuk offered a denture construction in the form of a pin crown-inlay. A pin crown-inlay contains an artificial crown, a pin and a semiring on the lingual and vestibular sides, the edges of the semirings repeat the form of the gums, and the length of the pin makes 2–4 mm. This allows increasing the area of the contact of the pin construction with the temporary tooth root and respectively the strength of its attachment to the root.

Temporary pin crown-inlay. After endodontic treatment one makes a pin hole 2-4 mm deep in the tooth root with a direct diamond dental drill, obtains an impression of the stump with a hole and sends it to the dental laboratory to make a whole cast construction of the pin crown-inlay. Modeling of the crown-inlay frame and casting are carried out according to a generally accepted technique. Retention balls (pearls) and a composite covering material are used to make a crown. The stump tightly covers the root surface because the surface of material contact corresponds to the form of the surface of the boundary part of the gums, and the form of the pin – to the form of the hole in the root. Edges of the stump, which border upon the gum, form two semirings on the lingual and vestibular sides enveloping the surface of the root. The whole cast pin crown-inlay is fixed on the root with the help of glass ionomer cement. A pin crown-inlay allows restoring the form of the tooth crown in case of its complete destruction, providing its solid fixation on the tooth, achieving the highest cosmetic and functional effect.

Indications for application of standard metallic crowns:

- restoration of temporary molars under the condition that some surfaces are substantially restored;
- restoration of teeth in children with a high activity of the carious process;
- restoration of teeth after treatment for pulpitis, which usually makes temporary molars brittle and predisposed to fractures;
- restoration of teeth with development defects;
- restoration of broken temporary molars;
- preservation of an interdental space;
- in bruxism;
- restoration of permanent erupted molars with hypoplasia.

FITTING OF STANDARD METALLIC CROWNS

A set of standard metallic crowns, available in Great Britain and European countries, is supplied by 3M Dental. Crowns are available in many sizes: from 2 to 7.

Preparation of a tooth consists of a couple of stages.

Stage 1. Local anesthesia and rubber dam. One should conduct local anesthesia, though it is not always necessary in the course of tooth restoration after pulpitis treatment. However even in such a case one should prepare teeth, the free gingiva in particular, which may condition certain discomfort. One should also use a rubber dam. Since one usually prepares for tooth crowning during the same visit when

pulpitis is treated, local anesthesia and a rubber dam are already applied. The rubber dam is needed if a metallic crown is adjusted to restore a tooth with substantial caries etc. Where possible the clamp for rubber dam fixation should be mounted on the tooth located distally relative to the tooth subject to restoration. Nevertheless, if a clamp is applied on the tooth, which should be prepared for crowning, there develop complications: preparation of approximal surfaces is complicated because the rubber dam will twist around the drill. In this case the doctor is recommended to carry out all the necessary odontologic preparation, except for the distal approximal surface, with a rubberdam. Afterwards it should be removed, the doctor is to finish preparation of the distal approximal surface and crown the tooth without the rubber dam. Alternatively the rubber dam may be drawn aside and fixed in this position from the side of the approximal tooth surface by the dentist's assistant with the help of a flat instrument, e.g. a smoother, when this surface is being prepared.

Stage 2. Occlusion height decrease.

In order to avoid occlusion height increase after treatment the crown is prepared until the tooth completely gets out of occlusion and there forms space for the crown. If a rubber dam is used, it is difficult to control occlusion. In such cases comparison with the height of adjacent teeth might be helpful, which has been exemplified by completed preparation of the masticatory surface of the left second lower temporary molar.

Stage 3. Preparation of the medial and distal approximal surfaces.

When one performs the third stage, he should be especially careful to avoid accidental removal of the enamel of the adjacent tooth. The adjacent tooth is secured best by placing a wooden wedge between the teeth before preparing the approximal surface or preparing with a reserve of dental tissues more proximally than the drill during movement in the buccolingual direction. It is marked on the diagram of approximal surface preparation. Preparation of the approximal surfaces is the most important part of tooth preparation, and one should be particularly attentive for a butt joint or a prominent edge not to form: this would hamper crown adjustment. Interdental papilla bleeding is inevitable. When preparation of the approximal surfaces is finished, one performs verification inspection of preparation quality with the help of a probe to receive evidence that there is no prominent edge and there is enough space for a crown.

Stage 4. Smoothing of sharp edges and final inspection of the quality of tooth preparation.

Sharp edges are smoothed and the doctor performs final inspection of the quality of preparation; a gap should be formed from the side of the masticatory and approximal surfaces without any edges protruding onto the approximal surfaces.

Stage 5. Choosing a crown for trial adjustment.

For the first time one is recommended to measure the tooth width in the mesiodistal direction with the help of a sliding caliper and choose a crown according to the obtained results. Crown dimensions vary from 2 to 7. They can be tried on until one of them fits. Usually it is better to begin crowning a tooth from the lingual surface, and then move in the buccal direction.

When a crown covers a tooth, it should click under slight pressure. If there is

no clicking, it means that the crown is too big and the doctor should select a smaller crown.

Stage 6. Crown adjustment.

Contemporary crowns are well constructed and usually require no adjustment, still, in some cases, if the gums turn pale after complete crowning, crown edges are to be cut off. Insignificant paleness is always noted, it is permissible. If there develops evident paleness, crown edges may be cut off with the help of sharp metal crown scissors. After this one should smooth sharp crown edges with an abrasive stone.

Stage 7. Bending crown edges.

Crown edges are bent with the help of either crampon pliers, or Adams pliers. This stage aims to provide firm adherence of crown edges to the tooth cervix and prevent plaque formation on the crown.

Stage 8. Crown cementation.

At this stage it is important for cement to be mixed correctly and fill the crown completely. At first the crown is put on the tooth from the lingual side, and then from upwards onto the buccal side. If it fits correctly and tightly and is bent, resistance is felt during fitting, and after the crown settles on the tooth completely, clicking is heard. If a rubber dam is used, the dentist pushes on the crown until cement hardens. If a rubber dam is not used or was removed before cementation, the child may be asked to clench his teeth tightly. If the dentist is to crown two adjacent teeth during one visit, both crowns are mounted on the cement simultaneously.

Stage 9. Removal of cement excess.

Cement should harden to such an extent that any excess can be easily removed with the help of a suitable instrument. All excess cement must be removed from the approximal surfaces by the gingival margin. A floss with a single knot fits the best for this purpose. It is pulled back and forth in the interdental space by the cervices removing cement excesses. It is advisable to polish crowns with a rubber head and grind them with pumice.

Stage 10. Final inspection of crown quality.

At the final stage the crown is to be checked in occlusion and slightly polished with special paste. One should not pay attention to slight disturbances of occlusion because after crowning temporary molars can adapt independently in a short space of time.

Stage 11. Case monitoring.

During every scheduled visit the dentist is to check the crowns in occlusion, their abutment to the tooth cervix, adjustment and fit. Special attention is to be paid to the condition of the gingival margin around the crown. If the crown edges are qualitatively bent and fit nicely, dental deposit is easily removed by means of daily oral hygiene.

PROSTHETICS PROBLEMS AND THEIR SOLUTION

1. The crown does not fit from the side of the approximal surface. As a rule, this means that there is a prominent edge. It is removed with the help of a cone-shaped fissure drill.
2. Defective fitting of the crown to the tooth. Sometimes such a defect is caused by

caries on the approximal surface of the restored tooth and displacement of the tooth located more distally in the dental arch. In this situation a standard metallic crown, which fits a tooth tightly in the antero-posterior direction, will appear too large in the mesio-distal direction. In order to eliminate the indicated defect the crown is slightly turned in the antero-medial direction in such a way that it somewhat protrudes from the dental arch. If a crown fits too tightly, it can be squeezed in the mesio-distal direction being fixed in the beaks of Adams pliers to reduce its size. This is an effective method of correcting a mismatch between the form of a metallic crown and the tooth crown by reducing the size of the metallic crown in the mesio-distal direction. After the crown form is corrected, one should carefully bend its edges because they deform as a result of squeezing.

3. Requirements of parents concerning the esthetic appearance of the child's oral cavity after prosthetics. Parents rarely object to crowning teeth with metallic crowns, still, if they are worried about the esthetic aspect, crowns may be faced with a composite material applied onto previously cut opening on their anterior surface.

4. Physiological falling of a tooth covered with a metallic crown. Standard metallic crowns do not influence.

REMOVABLE CELLULOID CAPS FOR RESTORATION OF TEMPORARY INCISORS

Unattractive appearance or discoloration of temporary incisors in children is one of the reasons why parents appeal to a pedodontist for the first time. These teeth may be carious, discolored due to a congenital defect or a trauma or some malformation.

Caries of the upper frontal incisors is a persistent sign of nursing caries syndrome, also known as bottle caries or nursing bottle caries of the oral cavity. Such teeth must be restored. Nursing-induced caries is observed in preschool children and is caused by frequent and prolonged consumption from a bottle of drinks containing fermentative carbohydrates. This first of all concerns children's fruit drinks. However, such types of caries may also develop when a child consumes milk-based drinks and even during breast feeding. Such children are often allowed to suck from a bottle at night. During sleep salivation slows down considerably, thus, the buffer action of the saliva and mechanical cleaning are reduced to minimum. This leads to quick demineralization of the enamel and aggressive clinical course of caries. As a rule, the upper incisors and lower first temporary molars are affected the most. The lower incisors are rarely affected because during sucking they are protected by the tongue and are directly washed by the saliva produced by the submandibular and sublingual salivary glands.

Treatment of decayed temporary incisors depends on the stage of destruction, children's age and the possibility of establishing contact with them. The dentist can choose a preventive program including pieces of advice concerning feeding organization, oral hygiene methods. In order to stop the carious process and prevent its complications one should use fluorine preparations of local and systemic action.

For esthetic restoration of temporary incisors one may resort to standard celluloid caps in the form of teeth crowns for restoration with composite materials. This technology is known as the technique of restoration with the help of removable

celluloid caps.

Indications for teeth restoration with removable celluloid caps:

- deep caries of one or some surfaces of temporary incisors;
- congenital malformation of temporary incisors;
- discoloration of temporary incisors after a trauma;
- traumatic fractures of temporary incisors;
- temporary incisors with congenital discoloration (e.g. as a result of congenital erythropoietic porphyria);
- amelogenesis impairment.

Materials used for teeth restoration with celluloid caps. Most materials required for this technique can be afforded by any dental clinic. We mean standard sets of dental instruments used for teeth filling, handpieces, a cone-shaped drill for handpieces, a small ball-shaped drill for carious tissue removal, calcium hydroxide or glass ionomer cement for liners, simple composite material with appropriate etching and connecting materials, a light curing lamp and thin curved scissors. Celluloid caps in the form of crowns are available as the set 3M Strip Crown Kit (3M Dental, Loughborough, UK and of other firms). It is supplied with caps of different sizes specially made in the form of upper temporary incisors.

To restore with the help of caps one can use most contemporary filling materials on the basis of hybrid or microfilled composite resins. However, to achieve the best results one should take into account some factors before choosing a material. Some contemporary composite materials have colors of dentin – darker than the standard frontal teeth composite. These materials fit the best because they can effectively mask any change in the color of the dentin or whiteness of liner materials. It should also be noted that one should prefer material packaged in capsules, because they allow to easily fill caps for restoration.

If there remains little enamel after carious tissue removal, the strength of composite material fixation to both dentin and enamel is of high importance. At present there exist two bonding systems conditioning micromechanical connection with the dentin. They contain a resin (such as Glums 2000) and a solvent (such as ABC). Any of them fits the technique of restoring teeth with the help of caps. If a doctor is supposed to restore all the four upper incisors, it would better be done during one visit. But, if one plans to restore the teeth during two visits, it is recommended to restore two central incisors during the first visit, and two lateral – during the second visit. This will provide correspondence of the color and form between the left and right teeth. Restoration with the help of removable celluloid caps is a quick, simple and effective technique of restoring temporary incisors. Most children are satisfied with their improved appearance and we hope that this will heighten their (and their parents') interest in the good condition of their teeth.

CLINICAL-LABORATORY STAGES OF MAKING THIN-WALLED METALLIC CROWNS

Thin-walled metallic crowns have many advantages. When one applies them, there is no need to mechanically process the hard dental tissues, therefore the protecting coat of the tooth – enamel – is not affected. Consequently, this causes no painful sensations and the child feels no fear of manipulations which is very

important in pediatric practice.

Owing to elastic properties of steel and presence of gingival enamel elevation on the temporary teeth a thin-walled crown is 8–10 times denser than an ordinary one, it envelops the tooth cervix preventing its decementation and development of cervical caries. As a result, after chemical and mechanical processing the thickness of a thin-walled crown reduces to 110–120 mcm; if it is used, occlusion height increases inconsiderably and restores in a short time due to plastic rearrangement of the periodontium of the crowned tooth and the teeth opposing it, therefore its crown tightly fits the tooth cervix and ends at the level of the gingival margin excluding the development of inflammatory processes in the gum.

Thin-walled metallic crowns are made without teeth preparation, therefore the relief of their masticatory surface does not change, consequently the fissure-tubercle contact with the opposing teeth is preserved, which provides adequate redistribution and transfer of masticatory pressure, the child quickly gets accustomed to the artificial crown, there are no changes in the periodontium. Besides, permanent teeth germs develop normally and the process of temporary teeth roots resorption is not violated.

Clinical stages:

1. Impression tray selection.
2. Taking an impression.
3. Crown adjustment.
4. Crown cementation.

Laboratory stages:

1. Making plaster models.
2. Plastering in the occluder.
3. Wax modeling.
4. Stamping a metallic crown according to the standard method.
5. Chemical treatment and polishing of the crown.

If thin-walled metallic crowns are fixed on unprepared teeth, 50 % children have an insignificant increase of occlusion height, which normalizes in 1–2 days as a result of plastic rearrangement of the periodontium of abutment teeth; children quickly get accustomed to the crown and usually do not complain.

Thus, with the help of thin-walled metallic crowns one can restore the anatomical form of temporary teeth and preserve their functional value till second dentition, prevent caries recurrence and further decay of temporary teeth and development of dento-gnathic deformities; provide normal course of the first stage of occlusion height establishment, thus creating favorable conditions for the second occlusion height increase, normal growth of the jaw bones, development of permanent teeth follicles, their timely eruption, normalization of the masticatory function and harmonious development of the facial skeleton.

CLINICAL-LABORATORY STAGES OF MAKING PIN CROWNS

In order to restore the anatomical form of the crowns of frontal teeth with removed pulp one applies different pin constructions. Certain conditions are required to make efficient pin crowns both in children and adults: the length of not filled part of the root should exceed the length of the restoring crown, the walls of the stump of

the crown and root are to be strong and sufficiently thick, the cervical part of the tooth crown should protrude above the level of the gingival margin by 1–2 mm and be located at a sufficient distance from the opposing teeth, there should be no pathological processes in the periapical tissues.

Indications for pin construction application include complete destruction of the tooth crown, poor fixation of large fillings in teeth with removed pulp, and impossibility to restore the anatomical form of the tooth crown with fillings. Absolute contraindications for making pin constructions include temporary teeth and teeth with underdeveloped roots, relative – low location of the tooth crown stump (in the paragingival area) and a pathological process in the periodontium.

Not infrequently during replacement of total defects of frontal teeth crowns orthodontists make all pin crown constructions used in adult patients: an ordinary pin crown, Ilyina-Markosian's pin crown with a cast damping inlay, Katz' pin crown with a semiring, Richmond's pin crown with a complete ring and a facet, Akhmedov's pin crown. Each of these constructions has its advantages and disadvantages.

An ordinary plastic pin crown may be used only for temporary prosthetics, because the crown part of the pin tightly joins the cervical part of the root for a short time. An average period of using such a pin crown makes from 4 to 6–8 months (T.V. Sharova, 1985). It is impossible to make another pin crown for this root because the cervical part of the root is destroyed, located below the level of the gums and filled with the mucous tunic. In such a case the roots are to be extracted, and the dental arch defect is to be restored with a dental bridge with unilateral sliding support.

Ilyina-Markosian's pin crown is a more expedient construction because it includes a damping inlay, which improves stump hermetization and tooth fixation, especially in case of horizontal loads. However, this construction also does not provide long-term and complete hermiticity between the tooth crown and the root stump. Besides, preparation of a rectangular cavity for a damping inlay reduces root strength, especially in the region of right angles, which may lead to its splitting.

Katz' pin crown includes such elements as a pin, a protective root shield, a semiring (from the lingual or palatine side) and a plastic tooth. The protective root shield and semiring improve hermetization of the tooth crown stump. Still, in this denture construction different parts of the root stump are in different conditions, notably: from the lingual or palatine side the root stump orifices are enveloped with a metallic semiring, while the vestibular and approximal surfaces are free from metallic protection – plastic abuts upon them. Consequently the metal, plastic and dental tissues have different expansion factors, the presence of oral fluid promotes quick cement resorption. Constant action of vertical and horizontal forces during masticatory apparatus functioning quickly violates hermetization between the root stump and the pin crown elements. Afterwards the root stump is gradually damaged on the vestibular side and with time the pin crown falls out.

Richmond's pin crown, used to replace defects of frontal teeth crowns, corresponds to all the requirements of such constructions. Still, to make a high-performance crown of this construction precious metals are needed, which prevents its wide application in everyday practice. Besides, the technique of making such a

crown is rather complicated: one is to make a semiring, solder it, make a protective root shield, solder it to the ring and the pin, face the crown with ceramic or plastic materials.

A.A. Akhmedov (1968) offered to use a combined crown with a pin to restore total defects of frontal teeth crowns. This construction is rather stable, simple to make and durable. At the same time, if this crown is used, the tooth stump is unequally protected from different sides: the metallic edge of the crown abuts upon the palatine surface of the root, and the plastic edge – upon the vestibular, cutting edge and approximal sides. Consequently, the construction has the same disadvantages as an ordinary pin crown and Katz' pin crown.

PROSTHETICS OF TEETH DEFECTS IN TRANSITIONAL DENTITION

Transitional dentition is the most responsible period of dento-gnathic apparatus formation. This period consists of four stages of occlusion height increase (1st stage takes place in the period of temporary occlusion; 2nd stage – eruption of the first permanent molars and the group of incisors; 3rd stage – eruption of the second molars and the group of premolars with canine teeth; 4th – eruption of the third permanent molars). It should be noted that the 4th stage of occlusion height increase is not always observed as a result of their congenital absence, i.e. adentia. Thus, almost 70 % population of the planet have radiologically verified adentia of one to all four third permanent molars. Therefore one cannot always count on this stage of occlusion height elevation.

Besides, it falls on older age.

In the period of transitional dentition there begins the formation of sagittal and transversal occlusive curves. Their formation may be negatively influenced by both early loss of temporary teeth and their crowns destruction, which leads to medial displacement of teeth and dental arches shortening, and also to dentoalveolar lengthening in the region of extracted opposing teeth. Therefore preservation of temporary teeth and timely prosthetics of teeth and dental arch defects in children allows preventing unfavorable complications from the side of the dento-gnathic apparatus, creating proper conditions for their further formation. This can be realized by means of efficient pediatric denture constructions. Thin-walled metallic stamped crowns are used to cover temporary and permanent first molars. In many children with multiple temporary teeth caries the first permanent molars are also affected by caries already at the stage of their eruption. Such teeth decay quickly not only due to caries but also due to functional overload. Only filling of these teeth is ineffective. Thin-walled crowns are temporary because the molars have not erupted completely. After complete eruption of permanent teeth temporary thin-walled metallic crowns are replaced with permanent denture constructions. Thin-walled metallic crowns are also used in case of traumatic injuries of dental crowns, which are more frequently observed at this age. They are also temporary, made to protect teeth from unfavorable factors and to restore the anatomical form of the tooth, which is especially important during formation of the dental arches and occlusal relations in the period of transitional dentition. Besides, making of thin-walled metallic crowns is less traumatic for children because they do not require teeth preparation; they are easily removed if endodontic treatment is required, they also do not hamper the process of permanent

teeth roots formation. Nevertheless, they do not meet esthetic requirements of patients and their parents.

CLINICAL-LABORATORY STAGES OF MAKING INLAYS

The choice of microprosthesis construction, which is meant to restore the anatomical form of teeth, depends on the child's age, condition of the pulp, the degree of root formation, form, localization and dimensions of the dental crown defect, type of occlusion. Most often inlays are preferred because they offer a number of advantages compared to fillings. Inlays allow restoring the anatomical form of the tooth, creating contact points with the adjacent and opposing teeth, prevent the development of dentoalveolar lengthening and horizontal deformities, recover the masticatory function. V.S. Kurylenko based her classification of teeth defects, which are to be replaced with inlays, on the ways of retention point formation. Taking this sign into consideration the scholar divides all defects into defects of teeth with removed pulp and of teeth with living pulp. Defects of teeth with removed pulp comprise the first class, and defects of teeth with living pulp – the second class. The second class, in its turn, is subdivided into four subclasses. The first subclass includes defects of the masticatory teeth, in which cavities are located on one approximal, masticatory-approximal or two approximal surfaces.

The second subclass includes defects of the frontal teeth, in which cavities are located on the approximal surface and there are no cutting angles. The third subclass includes defects of all groups of teeth, in which cavities are located on any surface except for Class 1 defect according to I.S. Kurylenko. The fourth subclass includes atypical cavities, i.e. cavities and teeth, which cannot be referred to any of the mentioned three subclasses. The doctor records pulp condition, teeth group, and teeth class according to defect localization in the case history, and then proceeds to the next stage – preparation of the cavity. Inlays are made of steel, titanium, different alloys, for instance gold and platinum, silver, palladium, and also plastic, ceramics or combinations of materials (metal–plastic, metal–ceramics, metal–composite). In order to provide reliable fixation of an inlay in the dental cavity there are created additional retention points or metal fitting is introduced. If inlays are used in children, one should provide their proper fixation: isolation of the broad dentinal tubules with the living pulp from the toxic action of the materials used to make inlays, prevention of secondary caries development, exact and tight abutment on the tooth. An inlay is fixed securely due to introduction of a fixture, whose construction depends on defect topography and pulp viability. Inlay fixture is made of steel orthodontic wire, located along the tooth axis and fixed with cement in microtubules prepared in the dentin. If the pulp is living, tubules are made in the dentin parapulpally with a spherical drill. In cutting edge defects tubules must be vertical and parallel to each other, in angle defects one tubule is made vertical and another one –horizontal (at a right angle). Tubule length should not exceed 3-5 mm, it depends completely on defect topography and child's age. In tooth crown defects associated with pulp lesion microprosthesis is made after appropriate therapeutic treatment of the tooth taking into account root formation. If the tooth root is formed completely, after pulp extirpation the canal is filled to the apex leaving the orifice and the middle part of the canal free from cement for introduction of the reinforced part of the inlay. If the root

system is not formed, the doctor covers the pulp stump with dental treatment paste, which stimulates biological processes of root apex growth, and the canal orifice is filled with cement, into which the reinforced part of the inlay is introduced.

Because of complete absence of permanent teeth crowns in children in the period of transitional dentition there are used cast metal stump inlays, which are covered with plastic crowns after adjustment and fixation. Nevertheless, in children in the period of transitional dentition permanent teeth continue to “grow”, i.e. erupt. Considering this condition, one uses a drill to make a circular recess around the tooth stump at the level of the gingival margin during making stump metal inlays; the supraradical part of the inlay is modeled somewhat narrower than the diameter of the tooth stump. This makes it possible after complete eruption of the tooth and replacement of the cover crown to avoid additional preparation of the supraradical part of the metal stump, which is rather traumatic for the patient. Besides, preparation of the metal stump inlay is not advisable, because vibration and possible overheating may cause its further decementation. Slight additional preparation is restricted to hard dental tissues projecting above the stump and becoming bare after its complete eruption.

Stump inlays are used in the period of transitional dentition if 2/3 of the tooth crown is decayed and the pulp is devitalized. Decay of the crowns of the first permanent molars is mainly caused by caries, and of the incisors – by trauma. Application of stump inlays in children in the period of transitional dentition under the condition of appropriate endodontic treatment before prosthetics does not cause pathological changes in the periapical tissues, does not hamper final formation of the roots, promotes adequate distribution of functional load on the affected tooth, and also allows replacing cover crowns after complete eruption of permanent teeth.

PROSTHETICS OF TEETH DEFECTS IN PERMANENT OCCLUSION

The period of permanent occlusion in 16-year-old children cannot be considered complete. Though all the teeth in the oral cavity are permanent, formation of the dento-gnathic apparatus and interocclusal relations, rearrangement of the temporo-mandibular joints are still in progress. Besides, there takes place active growth and formation of the facial skeleton, and with that there improves myodynamic balance of the masticatory muscles. This process develops against the background of general formation of the skeleton and all the systems of the human organism. In this aspect an important role is played by the condition of the oral cavity of the child, i.e. of the developing organism. Widespread caries affection of both temporary and permanent teeth among children and unsatisfactory condition of preventive work, and also considerable prevalence of teeth and dental arch defects and untimely dental prosthetics do not promote physiological conditions of development not only of the dento-gnathic apparatus, but of the child's organism in whole.

The permanent period of occlusion is not the final stage in dento-gnathic apparatus formation. Therefore preservation of all the permanent teeth and timely orthopedic treatment of teeth and dental arch defects must become the most important task of pedodontists.

In this consideration, development of efficient denture constructions for

children in the period of permanent occlusion aimed to compensate teeth and dental arch defects is another important problem of pediatric dentistry.

If the crowns of teeth, mainly molars, are destroyed, there are widely used individual stamped metallic crowns. They are indicated if there is observed: defect of 1/3 of the tooth crown, poor fixation of fillings and their frequent replacement. More significant crown defects – up to 2/3 in a tooth with removed pulp – are replaced after appropriate endodontic treatment with pin inlays. After inlay fixation the molars are covered with metallic crowns.

As for the frontal teeth, mainly incisors, if 1/3 of their crown is destroyed by caries or a trauma, provided the pulp is living, semicrowns are cast. In this case the teeth are not prepared, the metallic part covers the oral surface of the tooth, the crown is fixed on the tooth with a composite material with simultaneous closing of the defect on the vestibular surface.

If there is no tooth crown, pin crowns-inlays are made.

It is the most difficult to apply dentures in children, whose hard dental tissues are considerably worn out, especially if this concerns all teeth in the period of permanent occlusion, which is observed in Steinton-Capdepon's syndrome. Root canals obliteration and root deformation hamper the use of pin crowns-inlays. The risk of having such serious complications as perforation makes clinicians refuse from indicated denture constructions in this pathology.

V.P. Vozniuk offered a method of orthopedic treatment of children if the teeth are pathologically worn out. Thus, one clinically determines the condition of the hard dental tissues: the extent of wear, the type of wear (horizontal or vertical), topography and number of teeth with hard tissue attrition. X-ray examination allows studying the condition of teeth roots: their size and form, canal permeability, and also condition of the periapical tissues. Besides, there is detected teeth electrosensitivity and periodontal tissues endurance to vertical loads, i.e. VPD – the force of pain induction. Afterwards one builds up the tooth stump with the help of the composite material Charizma PPF or glass ionomer cement and the parapulpal dental pins produced by the firm Dental (Switzerland), Titanium Dentin Retention Pins. One marks places for parapulpal pins location on the occlusal surface of each worn tooth beforehand.

During placement of parapulpal pins one takes into account the size of the occlusal surface of the tooth, its group, functional capacity, safety zones (according to Abolmasov) for pin location.

In order to provide proper fixation of the supraradical composite part not less than three parapulpal pins are screwed on the worn surfaces, providing three-point planar fixation, i.e. in the form of a triangle, because two-point fixation, i.e. linear, is shortterm and ineffective. One screws three parapulpal pins on the incisors, four – on the canine teeth and premolars, five – on the lower molars, and four parapulpal pins – on the upper molars. After this one uses composite to model an artificial tooth stump.

If necessary, one carries out stepwise occlusion rise, building up the tooth stump with a composite taking into account interocclusal distance in the state of physiological rest.

The final stage of dental prosthetics is production of plastic dentures or dental whole cast combined bridges.

Materials for self-control:

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

- to sketch in the album the drawings with tooth crown defects classification;
- to sketch in the album the drawings with different types of dentures for tooth crown defects removing.

B. Tasks for self-control:

1. The most common cause of hard tissues defects of teeth and dentitions are:

caries and its complications

non-carious defects

trauma

primary adentia

inflammatory processes of the jaws

2. Premature loss of teeth in children leads to the following complications:

all answers are correct

the development of secondary deformities of dentition

the formation of flat face with loss of the frontal teeth

reducing the height of the bite with loss of the lateral teeth

functional disorders

3. By T. V. Sharova and G. I. Rogozhnikov, there are the following number of teeth and dentition destruction stages:

4

3

2

5

6

4. Determine the character of damage at the I stage of teeth and dentition destruction:

partial defect of the tooth crown without pulp damage

significant or complete defect of the tooth crown with pulp damage

the dentition length defects is one or two teeth

defects of dentition large extent, the complete absence of teeth

intact teeth

5. For the restoration of temporary teeth hard tissues at the I stage of teeth and dentition destruction used:

thin-walled prosthetic crowns

inlays

pin teeth

veneers

aesthetic restoration

6. To restore hard teeth tissues at the I stage of teeth and dentition destruction in the

period of change of teeth is used:
thin-walled prosthetic crowns
inlays
pin teeth
veneers
all answers are correct

7. To restore hard teeth tissues at the I stage of teeth and dentition destruction in the permanent dentition period is used:
all answers are correct
veneers
inlays
different types of artificial crowns
aesthetic restoration

8. The peculiarities of dental crowns in children include:
all answers are correct
physiological teeth separation
the crown should not go into the gingival groove
use of thin-walled crowns
teeth dissect only in the incisor region or cusps region

9. By appointment the crowns can be:
all answers are correct
fixing
restoring
splinting
supporting

10. Permanent artificial crowns are used for:
restoration of hard dental tissues defects
fixation of orthodontic appliances
splinting of mobile teeth
the contents of medicines
coating of teeth, which serve as a support for the clasps

11. Crowns on upper central incisors are components of the following orthodontic appliance:
Korkhaus
Eisenberg-Herbst
Angle
Ainsworth
Pozdnyakova

12. Crowns on upper central incisors are components of the following orthodontic

appliance:

Katz

Eisenberg-Herbst

Angle

Ainsworth

Pozdnyakova

13. The crown on the canine, second premolar and first permanent molars is part of the following orthodontic appliance:

Pozdnyakova

Eisenberg-Herbst

Katz

Angle

Ainsworth

14. Crowns on first permanent molars is part of the following orthodontic appliance:

Angle

Eisenberg-Herbst

Katz

Pozdnyakova

Ainsworth

15. Determine the character of the damage at stage II of the destruction of the teeth and dentition:

significant or complete defect of the tooth crown with pulp damaging

partial defect of the tooth crown without pulp damaging

the defects of the dentition with the length is one or two teeth

defects of dentition large extent, the complete absence of teeth

intact teeth

16. At the complete destruction of the tooth crown shows the making:

pin tooth

artificial crowns

inlays

veneers

microdentures

17. Determine the character of the damage at stage III of the destruction of the teeth and dentition:

the defects of the dentition with the length is one or two teeth

significant or complete defect of the tooth crown with pulp damaging

partial defect of the tooth crown without pulp damaging

defects of dentition large extent, the complete absence of teeth

intact teeth

18. Determine the character of the damage at stage IV of the destruction of the teeth and dentition:

defects of dentition large extent, the complete absence of teeth

the defects of the dentition with the length is one or two teeth

significant or complete defect of the tooth crown with pulp damaging

partial defect of the tooth crown without pulp damaging

intact teeth

19. Dental defect can be classified using the following classifications:

all answers are correct

Betelman

Kennedy

Vasilenko-Tril

Demner-Lpihin

20. Interdental spacer is used to:

save the space for the premolars at the premature loss of deciduous molars

save the space for the permanent incisors in case of its premature loss

replacement of dentition defect 1 tooth length

replacement of dentition defect 2 teeth length

replacement of dentition defect of more than 3 teeth length

21. For replacement of dentition defects apply the following types of prostheses:

bridges, partial, immediate

inlays, pin teeth

the obturator, protective plate

inlays, artificial crowns

post resection dentures

22. In some of these syndromes orthodontic treatment involves the fabrication of complete removable denture with double dentition?

Stanton-Capdepon

Crouzon

Turner

Down

Eshler

23. An adult with a temporary tooth in the dental arch, with III degree retention of the permanent tooth, you must:

maintain the temporary tooth, dispensary observation, X-ray examination 1 time in a year

orthodontic treatment

dental prosthetics

reitherapy

extraction of impacted permanent tooth

24. The first dentition defects group by Demner-Lepichin classification includes:
limited dentition defects (one, bilateral)

end defects where there are two or more adjacent teeth on two sides

end defects when missing one or more teeth with one side

limited dentition defects in the frontal part

the crown defects of teeth

25. The second dentition defects group by Demner-Lepichin classification includes:
single, bilateral end defects with the absence of two or more adjacent teeth

unilateral end defects with the one tooth absence

included defects of the dentition (single, bilateral)

included defects of dentition in the frontal part

included defects of dentition, bilateral

26. Early child prosthetics should not be:

complex

effective

preventive

simple

warning harmful habits

27. Interdental spacer is used for:

teeth displacement prevention

the tooth displacement medially

the tooth displacement distally

the bite increasing

the bite decreasing

28. Identify the main cause of teeth loss in children:

trauma

caries and its complications

adentia

impacted teeth

inflammation of the bones

29. What complication may occur in children with premature loss of temporary teeth?

all answers are correct

violation of height teeth formation process

the teeth inclination to the defect direction

dentition shortening

uneven growth of the jaws

30. What's the feature of the partial dentures design in children?

all answers are correct

the presence of the expansive element
the absence of artificial gums
increased base part
teeth put on protects

31. The special features of children's prosthetic crowns are:
the edge of the crown does not go under the gum, preparation chewing surface of the tooth
the edge of the crowns comes under the gum
preparation of all surfaces of the tooth
dissection of the tooth chewing surface
the edge of the crowns comes under the gum on 2 mm

32. If you have a 6-year-old child of malocclusion and dentition defect, you must:
no correct answer
manufacturing appliance-denture
prosthetics
orthodontic treatment
orthodontic treatment, and then prosthetics

33. What distinguishes the design of the partial removable prosthesis on the upper jaw for children?
the border of the basis comes to line "A"
reduction of the prosthetic bed
the clasps presence
dentures are made without polymerization
there is no correct answer

34. At 7-12 years of age it is recommended to replace preventive dentures at least:
once in a year
two times in a year
once in 2 years
once in 2.5 years
once in 3 months

35. At the children's prosthetic construction choosing take into account:
all answers are correct
the character of the dentition defect
the presence of harmful habits
emotional state
age of the patient

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