

Danylo Halytsky Lviv National Medical University
Pediatric Dentistry Department

**Methodical instructions for practical classes on the subject
"Pediatric Therapeutic Dentistry"
studying of specialists of the second (master's) level of higher education
for students of the IV year of the VII semester
specialty 221 "Dentistry"**

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Methodical recommendations were discussed, re-approved and confirmed at the meeting of the Department of Pediatric Dentistry of Lviv National Medical University named after Danylo Halytsky
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THEMATIC PLAN OF LECTURES
CHILDREN'S DENTISTRY
(VII semester)

	Topic	
1	Dental caries in children. Etiology and pathogenesis of caries. Classification. Clinic, diagnosis and treatment of caries of temporary and permanent teeth in children. Violation of development and formation of teeth. Clinic, diagnosis, treatment.	2
2	Anatomy and physiology of the pulp of temporary and permanent teeth in children. Etiology and pathogenesis of pulpitis. Classification. Clinic, diagnosis and differential diagnosis of pulpitis in children Treatment of pulpitis of temporary and permanent teeth in children.	2
3	Anatomical and histological structure and functions of the periodontium in children at different age periods. Etiology and pathogenesis of periodontitis. Classification. Clinic, diagnosis and differential diagnosis of periodontitis in children. Treatment of periodontitis of temporary and permanent teeth in children.	2
	In total	6

**THEMATIC PLAN OF PRACTICAL LESSONS
ON THERAPEUTIC DENTISTRY OF CHILDREN
for the VII semester**

	Topic name	hours
1	The main stages of the development of temporary and permanent teeth. Periods of establishment, mineralization, eruption and formation of temporary and permanent teeth in children. Determination of factors influencing the processes of tooth development in children.	2
2	Caries of temporary teeth in children. Patterns of clinical manifestations and course. Diagnosis, differential diagnosis, treatment.	2
3	Features of preparation and filling of carious cavities in temporary and permanent teeth, choice of filling materials.	2
4	Caries of permanent teeth in children. Patterns of clinical manifestations and course. Diagnosis, differential diagnosis, treatment.	2
5	Preparation and filling of carious cavities in various forms of caries. Selection of sealing materials. General treatment of caries: planning, methods.	2
6	Errors and complications in the treatment of caries in children of different ages. Their prevention and elimination.	2
7	Non-carious lesions of hard dental tissues in children: hypoplasia, fluorosis. Etiology, clinic, diagnosis, differential diagnosis, treatment, prevention.	2
8	Hereditary defects in the development of hard tissues of the teeth: amelogenesis imperfecta, dentinogenesis imperfecta, Stanton-Kapdepon dysplasia. Clinic, diagnosis, tactics of a pediatric dentist.	2
9.	Pulpitis of temporary teeth in children. Regularities of the clinical course in children of different ages. Clinic, diagnosis, differential diagnosis, treatment.	2
10	The choice of treatment method for pulpitis in temporary teeth in children depends on the form of pulpitis and the stage of tooth development. Vital pulpotomy - performance technique, materials. Peculiarities of local anesthesia in children	2
11.	Treatment of pulpitis of temporary teeth in children. Vital and devital pulp extirpation. Indications, execution method, effectiveness control. .	2
12.	Pulpitis of permanent teeth in children. Patterns of clinical manifestations in children of different ages, diagnosis, differential diagnosis Conservative method (Vital pulp therapy). Indications, execution method, efficiency	2

	ontrol, prognosis.	
13	Treatment of pulpitis of permanent teeth in children. Vital pulpotomy. Indications, method of execution, selection of medicines and materials.	2
14.	Treatment of pulpitis of permanent teeth in children. Vital and devital pulp extirpation. Indications, method of execution, choice of filling materials for root fillings.	2
15.	Errors and complications in the treatment of pulpitis of temporary and permanent teeth in children. Their prevention and elimination.	2
	in total	30

**THEMATIC PLAN OF INDEPENDENT WORK
ON THERAPEUTIC DENTISTRY OF CHILDREN
(VII semester)**

	Subject of classes	hours
	Methods of preparation of temporary teeth in children. The choice of filling materials depends on the chosen method of preparation.	2
	Glass-ionomer cements for restorations of temporary and permanent teeth. Indications and contraindications for use.	2
	Aesthetic restoration of permanent teeth in children using modern composite materials. Optical properties of permanent teeth in children and adolescents.	2
	Restoration of temporary teeth in children using standard metal crowns and celluloid caps.	2
	Differential diagnosis of non-carious dental lesions in children. Methods of prevention of non-carious lesions.	2
	Differential diagnosis of pulpitis of temporary and permanent teeth. Create a scheme of differential diagnosis.	2
	Materials and methods of obturation of root canals of temporary and permanent teeth in children.	2
	Application of modern endodontic techniques in the treatment of caries complications in temporary and permanent teeth in children. Machine and manual techniques, ultrasonic and laser treatment of root canals.	2
	Use of rubber dam in children's dentistry.	2
	Hours in total	24

PRACTICAL LESSON #1

Topic: The main stages of the development of temporary and permanent teeth. Timings of mineralization, eruption and formation of temporary and permanent teeth in children. Determination of factors affecting the processes of teeth development in children.

The aim: To study the main stages of development of temporary and permanent teeth in children. Timing of laying, mineralization, eruption and formation of temporary and permanent teeth. Determination of factors and their influence on the processes of tooth development in children .

Actuality: Learning the features and stages of development of temporary and permanent teeth, determining the factors that influence the processes of tooth development .

Control of the initial level of knowledge:

1. Periods of development child
2. Anatomical and physiological features of the oral cavity of a child in different age periods.
3. Features of the structure of the maxillofacial area of the child at different ages periods
4. ray aspects of the anatomical structure of the jaws bones
5. The terms of laying the beginnings of temporary and permanent teeth
6. Signs of physiological teething teeth

Lesson content:

And anatomo-physiological features of the child's body determine the prevalence and peculiarities of the course of dental diseases in childhood. It should be emphasized that several periods are distinguished in the development of a child. These are, first of all, the period of intrauterine development (antenatal period), newborn period (up to 3 weeks), toddler period (up to 1 year), pre-school period (1-3 years), preschool (3-6 years) and school period (6-18 years), which, in turn, is divided into three periods: junior school age (6-9 years), middle school age (9-11 years), senior school age (12-18 years). Each period of a child's development has its own characteristics, related to the development of the whole body, and the dental and jaw area in particular. Thus, in the period of antenatal development , the establishment and differentiation of temporary and permanent teeth takes place, the formation of the chemical composition of the hard tissues of the teeth. The pathological course of pregnancy affects the resistance of teeth. The newborn period is important for feeding a child, as artificial or incorrect feeding can lead to underdevelopment of the jaws and the occurrence of dental and jaw anomalies. The childhood period is important in view of the beginning eruption of temporary teeth and their secondary mineralization, as well as mineralization of permanent teeth. Pre-school age is characterized by intensive eruption of milk teeth, formation of their roots, milk bite and the appearance of the first carious lesions. Preschool age is a period of formed milk bite, intense caries damage and the beginning of eruption of permanent teeth.

School age it is characterized by intensive eruption of permanent teeth, a

decrease in the prevalence of caries in milk teeth due to physiological replacement, and an increase in the prevalence of caries in permanent teeth. Senior school age is characterized by the appearance of periodontal diseases.

Each age period is characterized by certain features of the development of the child's oral cavity. This is connected, first of all, with the physical development of the child and its dento-jaw area, in particular, teething and the formation of milk, variable and permanent bite.

in the process of tooth development.

These are the periods:

- bookmarks of the dental follicle and its intramaxillary formation;
- cutting;
- growth;
- root formation and periods of root resorption (for dairy teeth);
- periodontal formation (for permanent teeth).

The actual laying and intramaxillary formation take place in the antenatal period of the child's development. All other stages of tooth development take place after the birth of a child at different age periods.

Physiological teething is characterized by the evenness of teething, the sequence and timeliness of teething, emphasizes the timing of temporary and permanent teething. It should be noted that before the eruption of one or another tooth, the full development of its crown is noted. Root development and final formation occurs after teeth erupt and lasts 1.5-2 years for temporary teeth and 3-4 years for permanent teeth. During this period, the teeth are in the stage of an unformed root, and this causes the peculiarities of their structure. The period of stabilization is the period of a functionally complete temporary bite. Separately, the terms and forms of physiological resorption of the roots of temporary teeth should be emphasized, the differences between temporary and permanent teeth should be noted: temporary teeth differ from permanent teeth in size, color and shape of the crown, the size of the pulp chamber and the shape and size of the roots and canals tooth

Periods of development of temporary and permanent teeth play a major role in the occurrence and course of diseases of the hard tissues of the teeth, pulp and periodontium. Particularly significant features are observed during the period of tooth root formation: in temporary and permanent teeth, which are in the stage of root formation, the carious process has an acute and extremely acute course. In temporary teeth, caries is localized mainly in the cervical region of the incisors and on the contact surfaces and in the furrows of the molars, it is characterized by a progressive course, which leads to the rapid destruction of the dentin of the temporary tooth due to its weak mineralization and the absence of protective reactions from the morphologically and functionally immature pulp.

In temporary teeth in the stage of an unformed root, uncomplicated caries quickly turns into complicated forms. This is caused by: 1) the presence of wide dentinal tubules, a thin layer of insufficiently mineralized dentin, 2) a significant volume of the tooth cavity at this stage of the development of temporary teeth. Immature pulp at the stage of root formation is unable to form sclerosed and

replacement dentin, which restrain the progression of the carious process. Therefore, caries in such teeth quickly spreads beyond the enamel-dentine junction, the caries cavity is hidden, the dentine is light, removed in layers, there is no clear demarcation from the unaffected dentin

Regarding permanent teeth, the shorter the period from the beginning of the eruption of the tooth before it is affected by caries, the faster and more acute its course, which is explained by: 1) incomplete mineralization of the hard tissues of the teeth at the time of eruption of the tooth, 2) insufficient protective function of the pulp during the period of completion of their formation. The localization of the carious process in permanent teeth that are being formed is explained similarly. In the furrows and natural recesses of the crown, the maturation of which ends only 2 years after the eruption of the tooth.

Anatomical and physiological features of the structure of temporary and permanent teeth in childhood cause certain regularities in the course of both pulpitis and periodontitis. Thus, in temporary teeth, acute pulpitis is rare, since the peculiarities of the structure of the tooth, the pulp, which is at the stage of maturation, contribute to the rapid spread of the process and its transition into chronic forms with the spread to periapical tissues. A high frequency of traumatic pulpitis in permanent teeth in childhood is characteristic, since in children the pulp of the tooth has a larger volume, and its horns are much closer to the occlusal surface and the enamel-dentine junction.

The clinical course of temporary teeth is dominated by chronic periodontitis, caused by the lack of formation of the periodontium in children, low protective properties of the pulp (especially during the formation of the roots of the teeth), as well as the rapid course of the carious process. Thin layers of enamel and dentin of temporary teeth, a lower degree of their mineralization, and wide and short dentinal tubules also contribute to the spread of infection. In permanent and milk teeth at the stage of root formation, periodontitis can cause the death of the growth zone and the cessation of further formation roots

Knowledge of the timing of teeth eruption and the formation of the roots of both temporary and permanent teeth, as well as the characteristics of the course of diseases of the hard tissues of the teeth, the pulp and the periodontium at the stage of incomplete root formation, will allow to adequately choose methods of diagnosis and treatment of teeth in children of various ages, as well as to predict distant treatment results.

Control of the level of knowledge acquisition:

1. Anatomical and physiological features of the structure of temporary teeth
2. Anatomical and physiological features of the structure of unformed permanent teeth
3. Timings of hatching of temporary and permanent teeth
4. Terms of mineralization of temporary and permanent teeth.
5. The terms of the formation of temporary and permanent roots teeth
6. Stages of formation of temporary and permanent roots teeth
7. Signs of formation and resorption of tooth roots

types of physiological and pathological resorption.

8. The influence of the structure of temporary teeth on the course of caries, pulpitis and periodontitis

9. The influence of the structure of permanent teeth on the course of caries, pulpitis and periodontitis

Oriented test tasks:

1. *What are the periods of your child's development? do you know*
 - A. Antenatal; newborns; baby; preschool; preschool; school.
 - B. Newborns; baby; preschool; preschool; school.
 - C. Antenatal; baby; preschool; school.
 - D. Antenatal; newborns; preschool; preschool; school.
 - E. Antenatal; newborns; preschool; school.
2. *Anatomical and physiological features of the cavity structure of temporary teeth:*
 - A. Volumetric pulp chamber, wide root canals, their eye and apical opening.
 - B. Volumetric pulp chamber, narrow root canals and apical hole.
 - C. Small pulp chamber, wide root canals and apical hole.
 - D. A small pulp chamber, narrow root canals and a wide apical canal hole.
 - E. Unformed pulp chamber, root canals and apical hole.
3. *Anatomical and physiological features of the structure of the permanent cavityteeth:*
 - A. A small pulp chamber, narrow root canals and a narrow apical canal hole.
 - B. Volumetric pulp chamber, narrow root canals and apical hole.
 - C. Small pulp chamber, wide root canals and apical hole.
 - D. Volumetric pulp chamber, wide root canals and apical hole.
 - E. Unformed pulp chamber, root canals and apical hole.
4. *What is the reason for the planar placement of milkweed roots teeth?*
 - A. The presence of permanent follicles teeth
 - B. The wide crown part of the milky tooth
 - C. Excessive chewing load
 - D. Short cellular processes jaw
 - E. Reasons there is no
5. *How many teeth does the formed temporary have bite?*
 - A. 20.
 - B. 12.
 - C. 32.
 - D. 22.
 - E. 10.
6. *How many teeth does the formed permanent have bite?*

- A. 32.
- B. 28.
- C. 22.
- D. 16.
- E. 20.

7. *permanent tooth follicle develops with:*

- A. Dental plate of the enamel organ.
- B. The first gill arcs
- C. Dental mesenchyme nipple
- D. Root epithelium sheath.
- E. Temporary root cement tooth

8. *Formation of the root of a milk tooth happens:*

- A. Before the beginning of teething and continues after him
- B. To cutting
- C. After cutting
- D. During cutting
- E. 1.5 years after cutting

9. *Formation of the root and periodontium of the milk molar continues:*

- A. 2-2.5 years.
- B. 2.5-3 years.
- C. 1.5-2 years.
- D. 3 years.
- E. Before the start of resorption.

10. *Formation of the root and periodontium of the milk incisor continues:*

- A. 1.5-2 years.
- B. 2.5-3 years.
- C. 2-2.5 years.
- D. 0.5-1 year
- E. Before the start of resorption.

PRACTICAL LESSON #2

Lesson topic: Caries of temporary teeth in children. Patterns of clinical manifestations and course. Diagnosis, differential diagnosis , treatment .

The aim: To study the peculiarities of their clinical manifestations and the course of caries of temporary teeth in children of different ages. To study methods of diagnosis, differential diagnosis and treatment of various forms of caries of temporary teeth.

Actuality: Learn to diagnose caries of temporary teeth in children of different ages. Learn the features of differential diagnosis of caries of temporary teeth in children of different ages.

Control of the initial level of knowledge:

1. Anatomical and topographic features of the structure of temporal teeth

2. Chemical composition of solid fabrics tooth
3. What are the processes of de- and remineralization?
4. Risk factors for dental caries in children
5. Terms of mineralization, teething and formation roots

Lesson content:

Important points for understanding the causes of caries development of both temporary and permanent teeth are the knowledge of the anatomical and physiological patterns of the structure of the oral cavity of a child at different age periods, the peculiarities of the structure of temporary and permanent teeth, the timing of eruption and mineralization of teeth, the formation and resorption of their roots. Special attention should be paid to the ability to examine the child's oral cavity, determine the dental status and establish psycho-emotional contact with the patient.

First of all, we emphasize our attention on risk factors, theories and mechanisms of caries occurrence. Among the causes of caries, there are general tamistic factors. The main common factors are considered to be: poor nutrition, low fluoride content in drinking water, somatic diseases of the child and extreme environmental influences. Local: pathogenic plaque microflora , changes in the quantitative and qualitative composition of saliva, consumption of large amounts of carbohydrates. The causes of "bottle" caries in young children should be especially emphasized . A violation of the resistance of dental tissues also plays a role in the occurrence of caries, namely, an inferior structure, hereditary predisposition, etc.

A feature of caries of temporary teeth at the stage of root formation is an acute and extremely acute course. Carious lesions are usually localized in the cervical areas of the upper incisors and in the fissures of the molars. Symmetry and multiple lesions are characteristic. Caries spreads quickly along the plane ("planar" caries). The process can start from the cervical area, covering the entire tooth ("circular caries"). Damage of hard tissues is not deep, but quickly spreads over the surface, covering the entire layer of enamel, which is easily chipped. The pulp, as a rule, is necrotized. The rapid destruction of dentin due to its weak mineralization and absence is also noted protective reactions from the morphologically immature pulp. Also, "circular" caries is often found in the front temporary teeth of the upper jaw.

Acute initial caries of temporary teeth at the stage of the formed root is diagnosed very rarely in the clinic.

Acute medium caries of temporary teeth is one of the most common forms of caries at the stage of the formed root. During an objective examination, a carious cavity with a narrow entrance hole is revealed. Undercut edges of the enamel have a matte white color. Dentin is softened, removed in layers with the help of an excavator. When the thin edges of the enamel break off, the carious cavity can have a wide entrance hole. Probing is usually painless.

Sometimes, somatically healthy children have significant planar defects ("planar" caries) with dense, shiny, smooth dentin when probed.

The chronic course of medium caries of temporary teeth at the stage of the formed root is rare and is characterized by the absence of subjective sensations.

Deep caries at the stage of the formed root of temporary teeth most often has an acute course. Subjectively, there will be complaints of pain due to mechanical or

thermal stimuli. The carious cavity is localized within the near pulpal dentin. Its depth is less than that of permanent teeth, which is explained by the anatomical and topographic features of the structure of temporary teeth.

The chronic course of deep caries at the stage of the formed root is characterized by slow progression and the formation of dense dentin.

At the stage of root resorption of temporary teeth, acute caries rarely occurs.

Treatment of caries of temporary teeth is carried out by a conservative method without preparation (remineralizing therapy, impregnation method) or by the method of preparation and filling, which is used for superficial, medium and deep tooth caries.

Remineralizing therapy is carried out in the treatment of initial caries using preparations containing calcium, phosphorus ions, fluoride. Taking into account the age of children, it is advisable to carry out short-term manipulations - deep fluoridation of enamel, coating of teeth with fluorovarnishes.

Preparation is an action on the hard tissues of the tooth to remove pathologically changed tissues and create a cavity shape, which ensures a convenient and technological filling, preservation of the strength characteristics of the tooth, reliable fixation and aesthetics of restorations.

Today, there are various methods of preparation of hard tissues of teeth:

1. Mechanical - with the use of drills and hand tools
2. Chemical-mechanical - the use of special chemical systems that destroy tissues affected by the carious process, which are then removed with hand tools (Carisolv).
3. Kinetic, or air-abrasive. The method consists in supplying a jet of an aerosol containing water and an abrasive agent to the tissues to be prepared. The active component of the aerosol is an abrasive powder made of aluminum oxide particles. This method is often used to process figures before sealing, to eliminate deep enamel pigmentation, and to prepare small carious cavities. This type of processing makes it possible to cut fabrics to a minimum, which cannot be done even with the smallest bur.
4. Ultrasonic - the use of ultrasonic tips and special nozzles with a diamond coating of the working surface. The tip of the nozzle creates microscopic vibrational movements along an oval trajectory.
5. Laser - use of laser energy to treat carious cavities and hard tooth tissues.

Preparation of the carious cavity is an extremely important step in the treatment of dental caries in children. The possibility of stopping the progression of caries and the development of its complications, as well as ensuring the duration of the filling function, depends on the correctness of this stage.

Today, there are two principles for the preparation of carious cavities:

- "prophylactic expansion" - a method proposed more than 100 years ago by Black.
- of "biological expediency" or "gentle preparation", proposed by I.H. Lukomsky. (1948). A method that involves the removal of only tissues affected by caries to visibly unchanged tissues.

To fill carious cavities in temporary teeth, modern filling materials are used -

glass ionomer cements, compomers, composite materials, sometimes silicophosphate or silicate cements.

Control of the level of knowledge acquisition:

1. Peculiarities of examination of the oral cavity in children
2. Pathogenetic mechanisms of caries development of temporary teeth in children of different ages.
3. Classification of dental caries .
4. Localization of caries of temporary teeth in children
5. Clinic and diagnosis of initial caries of temporary teeth
6. Clinic and diagnosis of medium caries of temporary teeth
7. Clinic and diagnosis of deep temporal caries teeth
8. Differential diagnosis of initial and surface caries of temporary teeth.
9. Differential diagnosis of medium and deep caries of temporary teeth.
10. Peculiarities of the course of caries of temporary teeth with unformed roots.
11. Peculiarities of the course of caries of temporary teeth with formed roots.
12. "Circular" and "flat" caries. Features of the clinical course.

Oriented test tasks:

1. *The parents of a 5-year -old child turned to a pediatric dentist for a consultation. During clinical examination, in the cervical area 51 and 61 teeth were found to have matte white spots, rough on probing, stained with a 2% solution of methylene blue. Make the correct diagnosis.*

- A. Initial caries.
- B. Hypoplasia enamel
- C. Erosion enamel
- D. Fluorosis.
- E. Surface caries.

2. *The parents of a 4-year-old child turned to the dentist with complaints about the presence of a dark spot on the surface of the upper tooth on the right. During the examination of the oral cavity on the chewing surface of tooth 54, a carious cavity was found within the mantle pigmented dentin. After preparation - the bottom of the carious cavity is dense, probing is somewhat painful in the area of the enamel-dentine border. The reaction to thermal stimuli is negative. Percussion is negative. What is the most likely diagnosis?*

- A. Chronic average caries.
- B. Acute medium caries.
- C. Chronic superficial caries.
- D. Chronic deep caries.
- E. Chronic periodontitis

3. *The girl is 6 years old. Complaints about the destroyed 74th tooth. Objectively: a carious cavity was found on the chewing surface of tooth 74 within*

the dense mantle dentin. Probing the bottom and walls is not painful. There is no reaction to cold stimuli. The mucous membrane in the area of tooth 74 is unchanged. What previous diagnosis?

- A. Chronic average caries.
- B. Chronic deep caries.
- C. Sharp deep caries.
- D. Acute superficial caries.
- E. Chronic superficial caries.

4. The parents of a 4-year-old child complain of damaged lower lateral teeth. Objectively: on the chewing surfaces of 85 and 75 teeth, carious cavities with overhanging enamel edges were found within the soft mantle dentin. Which is the most likely diagnosis?

- A. Acute medium caries.
- B. Sharp deep caries.
- C. Chronic gangrenous pulpitis
- D. Chronic fibrotic pulpitis
- E. Chronic average caries.

5. During the preventive examination of a 4-year-old child, white spots with clear outlines were found on the ridges of 75 and 85 teeth. When probing the surface of the spots is somewhat rough. What additional research is needed to clarify diagnosis?

- A. Welcome color.
- B. EOD.
- C. Radiography.
- D. Radiovisiography.
- E. Fluorescent.

6. When examining the oral cavity of a 4-year-old child, white spots with uneven edges and a smooth surface were found in the cervical region of teeth 61 and 62 . Stains are stained with methylene blue. Which is the most likely diagnosis?

- A. Initial caries.
- B. local hypoplasia
- C. Fluorosis.
- D. Erosion enamel
- E. Systemic hypoplasia

7. During a preventive examination of a 5-year-old child, a carious cavity within the enamel was found on the vestibular surface of 51 teeth. Chalk- like enamel , softened. There is no reaction to thermal stimuli. Probing and percussion are painless. Which is the most likely diagnosis?

- A. Acute superficial caries.
- B. Chronic initial caries.
- C. Chronic superficial caries.
- D. Acute medium caries.
- E. Acute primary caries.

8. had cavities in the corner teeth of the lower jaw a few months ago . Objectively: on the chewing surfaces of 85 and 75 teeth, carious cavities with

overhanging edges of enamel were found, within the mantle of softened, light, dentin. Which is the most likely diagnosis?

- A. Acute medium caries.
- B. Chronic deep caries.
- C. Chronic fibrotic pulpitis
- D. Sharp deep caries.
- E. Chronic average caries.

9. *During a preventive examination in a kindergarten , a 3.5-year-old child was found to have a carious cavity on the proximal surface of tooth 54 within the dense, pigmented mantle dentin. Probing the bottom and walls of the cavity is painless. Which is the most likely diagnosis?*

- A. Chronic average caries.
- B. Chronic deep caries.
- C. Acute medium caries.
- D. Chronic superficial caries.
- E. Acute primary caries.

10. *The mother of a 2.5-year-old child complains about the appearance of white spots on the child's teeth. Clinically, in the cervical region of 51, 61 teeth, white enamel defects were detected , which lost its luster. The affected area is covered with a large amount of dental plaque. During probing – softening of the enamel, which is removed by an excavator. What is the most likely diagnosis?*

- A. Acute superficial caries.
- B. Fluorosis.
- C. Hypoplasia.
- D. Wedge-shaped defect.
- E. Chronic average caries.

PRACTICAL LESSON #3

Lesson topic: Peculiarities of preparation and filling of carious cavities, choice of filling materials.

The aim: To study the methods of preparation of carious cavities of temporary teeth in children of different ages.

Actuality: To study the features of caries treatment of temporary teeth in children. Learn the main criteria for choosing a filling material in the treatment of caries of temporary teeth. Learn the technique of filling carious cavities of temporary teeth in children of different ages.

Control of the initial level of knowledge:

1. Anatomical and topographic features of the structure of temporal teeth
2. Chemical composition of solid fabrics tooth
3. Classification of dental caries .
4. Localization of caries of temporary teeth in children is different age
5. Timing of eruption, tooth mineralization and formation roots
6. Peculiarities of preparation of carious cavities in temporary

7. teeth
8. Sealing materials. Choice in kindergarten stomatology
9. Remineralizing therapy.

Lesson content:

Important at preparation there is knowledge for this activity anatomical - physiological regularities structures cavities mouth child in different aged periods , features structures temporary and permanent teeth , terms cutting and mineralization teeth , formation and resorption their roots _

The preparation of carious cavities consists in the instrumental removal of necrotized tissues. During the preparation of temporary teeth, the following principles should be observed:

- the use of high-speed tips and burs with cooling;
- do not put pressure on the tissue tooth;
- use sharp, preferably new ones borrows;
- manual preparation by excavators of various types sizes

Preparation consists of the following interconnected stages:

- opening and expansion of caries cavities;
- necrectomy;
- carious formation cavities;
- edge processing enamel

carious cavities of temporary teeth , the method of " biological feasibility" is often used . It consists in removing only the affected hard tissues and does not require compliance with the principles of carious cavity preparation according to Black. The advantage of this method is the preservation of healthy tooth tissues.

A treatment option for caries of temporary teeth is atraumatic restorative treatment - ART method. This technique consists in manual preparation (necrectomy) of the carious cavity with enamel knives and excavators of various sizes, followed by filling with glass ionomer cement. The technique of performing the technique is as follows: the carious cavity is cleaned of softened dentine with an excavator, dried and sealed with glass ionomer cement. You can widen the carious cavity with a drill if there is no enamel knife. Treatment carried out in the initial stages of caries stops its further progression.

Atraumatic restorative treatment almost does not cause pain, does not cause psycho-emotional stress in children. This technique can be used at all stages of the development of temporary teeth in children with increased nervous excitability.

Chemical-mechanical removal of carious dentin consists in its preliminary chemical softening and subsequent careful excavation with manual tools. Set for chemical-mechanical removal of carious dentine Carisolv proposed in 1998 in Sweden. It includes syringes with a special gel and special tools for manual removal of cariously altered dentin. The pink gel is a mixture of amino acids (glutamic acid, leucine, lysine) and 0.95% sodium hypochlorite solution. The composition of the gel includes erythrosine. When a mixture of these substances is introduced into the cavity, a reaction occurs, resulting in the formation of N -chlorinate of amino acids, which reacts with the collagen of the carious dentin, as a result of which the

collagen denatures and the carious dentin can be easily removed from the carious cavity. Adjacent healthy dentin is not subject to chemical destruction. A sign of complete removal of carious dentin is the preservation of the pink color of the gel in the carious cavity.

Preparation of a carious cavity using the Carisolv system lasts an average of 5-15 minutes, for this you need 0.2-1.0 ml of gel. Sometimes the opening of the carious cavity is carried out using a drill. The use of the Carisolv system for the treatment of temporary teeth is more effective than permanent teeth, because lower degree of dentin mineralization.

Indications for chemical-mechanical preparation of the carious cavity in temporary teeth are:

- carious cavities of the 1st class according to Black, if there is free access to them;
- carious cavities of class V according to Black;
- secondary caries;
- deep caries;
- fear of dental treatment, especially in children familiar with a drill;
- inadequate behavior of the child, which prevents treatment by the traditional method;
- treatment of caries in children with psychoneurological disorders.

Undisputed advantages of the method are:

- minimal invasiveness;
- maximum preservation of healthy tooth tissues;
- almost complete absence of pain during the preparation process.
- The prepared dentin surface is heterogeneous and provides a good adhesive connection with glass ionomer elements.

Filling materials for temporary teeth must meet the following requirements:

- do not dissolve in the mouth liquid;
- the coefficient of thermal expansion should approach the coefficient of thermal expansion of enamel and dentine;
- harden in water or in saliva;
- have low thermal conductivity and minimal water absorption;
- have stability color;
- it is good to imitate the tissue of the tooth after hardening;
- to be non-toxic;
- have a pH close to 7 during and after hardening;
- do not shrink ;
- have a hardness close to hardness tooth;
- rub off slowly and do not have abrasives properties.

For this purpose, modern filling materials are used - glass ionomer cements, compomers, composite materials, sometimes silicophosphate cements. The use of SICs is due to their good adhesion to the hard tissues of temporary teeth due to chemical bonding with dentin and the ability to release fluorine over a period of time. A separate group of glass ionomer cements is SIC with silver content. The introduction of silver particles into the composition of SIC increases their strength,

resistance to abrasion, hardness, provides X-ray contrast, prote, significantly reduces aesthetics.

Compomers can be used for filling temporary teeth, which have high aesthetic properties, sufficient strength, are used with adhesive systems and do not require etching of hard tissues.

It should also be noted that the choice of filling material in children's dentistry depends on the child's age, psycho-emotional state, stage of development of the temporary tooth, depth and localization of the carious lesion. The attention of students should be especially focused on the technique of filling carious cavities of temporary teeth with SIC and compomers.

During a practical session under the teacher's supervision, students examine children, fill out outpatient medical histories, draw up a treatment plan, and solve situational problems.

At the end of the lesson, a summary is drawn up, the correctness of filling out the medical documentation is checked, attention is paid to mistakes in the students' practical work.

Control of the level of knowledge acquisition:

1. Peculiarities of preparation of temporary carious cavities teeth
2. Treatment of initial caries of temporary teeth in children
3. Impregnation method of treatment caries
4. ART-methodology of temporary caries treatment teeth
5. Treatment of superficial caries of temporary teeth in children
6. Treatment of medium caries of temporary teeth in children
7. Treatment of deep caries of temporary teeth in children
8. Criteria for choosing filling materials in the nursery stomatology
9. Temporary sealing technique teeth

Oriented test tasks:

1. *The parents of a 2-year-old child turned to the doctor with complaints about the presence of carious cavities. After an objective examination, a diagnosis was established: acute medium caries of 52, 51, 61, 62 teeth. The child is non-contact. Your doctor's office tactics?*

- A. Impregnation with 20 nitrate solution silver
- B. Dispensary observation.
- C. Carious filling cavities
- D. Appointment of electrophoresis with calcium preparations and fluoride
- E. Antiseptic treatment of carious cavities

2. *During the examination of the oral cavity of a 4-year-old child, chronic medium caries was diagnosed on the chewing surface of 54.74 teeth. In the anamnesis - vegetative-vascular dystonia. What method of treatment is appropriate to use in this case case?*

- A. ART methodology.

- B. Remineralizing therapy.
- C. Preparation, filling.
- D. Grinding followed by remineralization therapy
- E. Impregnation with 20% nitrate solution silver

3. *The parents of a 5-year-old child applied for rehabilitation. After a clinical examination, a diagnosis was made: chronic deep caries of tooth 64. What filling material should be used in this case to restore the anatomical shape tooth?*

- A. Glass ionomer cement.
- B. Chemical composite hardening
- C. Zinc phosphate cement.
- D. Silico-phosphate cement.
- E. Silicate cement.

4. *A 4-year-old child complains of pain when eating in the area of the 75th tooth. Objectively: on the chewing surface of tooth 75, a carious cavity was found within the mantle, softened, light-colored dentin, filled with food residues. Probing is painful at the enamel-dentine junction, the reaction to a temperature stimulus is negative, percussion is negative. The diagnosis was established: acute medium caries of 75 teeth. What tactic of the doctor is appropriate in this case case?*

- A. Filling of the carious cavity with glass ionomer cement
- B. Impregnation with 20% nitrate solution silver
- C. Filling the carious cavity with a chemical composite hardening
- D. Sealing of the carious cavity with silicate cement
- E. Filling of the carious cavity phosphate-cement.

5. *The boy is 5 years old. After an objective examination, a diagnosis was established: acute medium caries of 52.53 teeth (Class I V according to Black). Which of the filling materials should be used in this case case?*

- A. Compomer.
- B. Amalgam.
- C. Light composite material hardening
- D. Silicate cement.
- E. Silico-phosphate cement.

6. *The mother of a 1.5-year-old child complains that the child has white spots on the front teeth of the upper jaw. Objectively: on the vestibular surface of teeth 51 and 61, the enamel is matte, softened upon probing. Probing is painless. Acute surface caries was diagnosed in 51.61 teeth. What is the optimal method treatment?*

- A. Impregnation with 20% nitrate solution silver
- B. Coating fluorovark
- C. Application of 10% gluconate calcium
- D. Treatment by the method of preparation and filling.
- E. Electrophoresis of 10% gluconate calcium

7. *A 6-year-old girl complains of short-term pain from cold irritants and pain when food enters the carious cavity. After the examination, a diagnosis was established: acute deep caries of tooth 84. What material is appropriate to use for a medical pad in this case case?*

- A. Paste containing hydroxide calcium
- B. Phosphate cement containing silver.
- C. Silico-phosphate cement.
- D. Phosphate cement.
- E. Glass ionomer cement.

8. *In a girl of 1 year and 6 months, carious cavities within the enamel were found on the vestibular surface of 52, 51, 61, 62 teeth. Probing carious cavities is slightly painful, percussion is negative. What medical tactics are appropriate in this case situation?*

- A. Impregnation with 20% nitrate solution silver
- B. Coating fluorovark
- C. Dispensary observation.
- D. Electrophoresis of 10% gluconate Sa.
- E. Electrophoresis 2% NF.

9. *A 5-year-old child was found to have carious cavities on the contact and chewing surfaces of 75, 74, 84, 85 teeth. A diagnosis of chronic deep caries 75, 74, 84, 85 was inserted. What filling material should be used in this case?*

- A. Ketac-molar.
- B. Silicin.
- C. Dycal.
- D. Evicrol.
- E. Infantid.

10. *The parents of a 3.5-year-old child turned to a dentist with complaints about significant tooth decay. After the examination, the diagnosis was established: multiple caries of milk teeth ($kp=9$). What filling material should be used in this case, if A RT - treatment method was chosen?*

- A. Glass ionomer cement.
- B. Polycarboxylate cement.
- C. Zinc phosphate cement.
- D. Silicate cement.
- E. Silico-phosphate cement.

PRACTICAL LESSON #4

Lesson topic: Caries of permanent teeth in children. Patterns of clinical manifestations and course. Diagnosis, differential diagnosis, treatment.

The aim: To study the anatomical, physiological, histological and radiological features of the structure of permanent teeth in children, the features of the clinical course of dental caries depending on the stage of tooth development.

Actuality: To learn how to diagnose and treat caries of permanent teeth in children of different ages.

Control of the initial level of knowledge:

1. Chemical composition of solid fabrics tooth
2. Concepts of "de-" and "remineralization" of enamel, homeostasis

enamel

3. Epidemiological indicators of caries teeth
4. Caries risk factors teeth

Lesson content:

When preparing for the lesson, you should pay attention to the anatomic-physiological, histological and radiological features of the structure of permanent teeth in children in different periods of their development. This will make it possible to correctly choose treatment methods, medicinal agents and filling materials. Proper treatment of a permanent tooth in childhood ensures its full functioning for a long period of life.

Demineralization and remineralization of enamel are processes that occur in parallel and are balanced among themselves. Under the influence of various risk factors, the phenomena of demineralization begin to prevail in the enamel, which leads to the development of caries. It should be noted that the frequency of caries in children is not the same in different age periods. The highest prevalence of this pathology of the hard tissues of the teeth is in children 6-7 years old (in temporary teeth). With age, the frequency of caries decreases due to physiological changes in the teeth. At the age of 7, caries of permanent teeth occurs in 50% (especially in molars). The highest frequency of caries in permanent teeth is observed in 12-year-old children. Separately, it should be emphasized that the incidence of dental caries at the age of 12 reflects the effectiveness of preventive measures

Attention should be paid to the fact that both local and general factors are of great importance in the occurrence of this pathology factors

They distinguish:

- by *localization*:

fissure, proximal, cervical, combined localization
(buccal, labial, tongue surfaces);

- by *the depth of the lesion*: initial, superficial, medium and deep;

- according to *the nature of the clinical course*: acute, chronic;

- according to *the sequence of occurrence*: primary, secondary and recurrent;

- by *pathomorphological changes* :

♣ caries in the spot stage (white, gray, light brown, brown, black);

♣ enamel caries (superficial);

♣ dentine caries (medium, deep, deep perforating) ;

Deep perforative caries corresponds to the clinic of pulpitis or periodontitis.

According to the WHO classification, the following are distinguished: K.02.0. Enamel caries. K.02.1. Dentin caries. K.02.2. Cement caries. K.02.3. Stopped dental caries. K.02.4. Odontoclasia. K.02.8. Other dental caries. K.02.9. Dental caries is unspecified.

Caries of permanent teeth in children has certain features of the clinical course. This is primarily related to the stage of permanent tooth formation and the child's health, which determines its immunological resistance. In children, acute forms of the course of caries prevail, which is due to incomplete mineralization of

their hard tissues. The localization of the carious process depends on the stage of tooth formation. In teeth with an incomplete stage of root formation, caries prevails in furrows and natural recesses crowns

Initial caries is most often located in the vestibular and cervical areas. Children have no complaints. It is detected during a dental examination. Diagnostics is carried out visually. It is differentiated from non-carious lesions of hard tissues. For diagnosis, the staining method using a 2% aqueous solution of methylene blue is used. In addition, the method of stomatoscopy in ultraviolet irradiation is used.

During the period of the formed root of the permanent tooth, the furrows are pigmented. At the same time, it should be taken into account that the majority of mineralized furrows should not be considered as caries. A pigmented furrow in which the probe does not linger and does not penetrate should not be considered as initial caries.

Surface caries occurs as a result of the progression of destructive changes in the enamel. Most children have no complaints. Sometimes there are complaints of short-term pain from chemical stimuli - sweet, salty, sour. Clinically superficial caries is detected during examination of the tooth surface and during probing: pronounced roughness, delay of the probe, enamel defect. Differentiate the data a form with acute initial and acute secondary caries, a cellular form of systemic or local enamel hypoplasia, as well as an erosive form of fluorosis.

Medium caries of permanent teeth is diagnosed very often. In most children, this form passes without complaints, so it is diagnosed during an examination or remediation of the oral cavity. A chronic form of medium caries is often diagnosed in older children and in teeth with a formed root. This form is differentiated from deep caries, chronic periodontitis.

Deep caries is diagnosed quite often. Since a thin layer of dentin remains before the pulp, children complain of pain from thermal and mechanical stimuli, which quickly disappears after the stimulus is removed. Differentiate with chronic fibrous pulpitis, pulp hyperemia, acute limited pulpitis and chronic form periodontitis

Particular attention should be paid to the diagnosis of carious lesions (at the same time, it is necessary to take into account the anatomical and physiological features of the teeth). So, initial forms of caries should be differentiated from non-carious lesions of teeth and other forms of caries, and deeper forms - from complicated forms of caries. Visual inspection, intravital staining method, probing of the affected area, as well as additional diagnostic methods (electro-odontometry, radiography) are used for correct diagnosis. Permanent teeth with incomplete formation differ from teeth whose development is complete. They have a relatively thin layer of hard tissues, they contain a smaller amount of mineral salts and are considered immature. Caries in such teeth develops faster, bacterial toxins more easily penetrate deep into the tissues, reach the pulp faster.

Treatment of acute primary caries of permanent teeth is carried out by means of remineralization therapy. For this, they use products rich in calcium, fluorine, phosphorus and other components. It is used for this purpose 0.01%

- 0.1% solution of sodium fluoride for rinsing and application, 1-2% solution for electrophoresis, fluorovarnishes, 3% solution of remodent, 10% solution of

calcium gluconate or calcium chloride, 2.5% solution of calcium glycerophosphate. Efficiency remineralization therapy is determined by the disappearance or reduction of the size of the demineralization focus. An important condition for the treatment of focal demineralization is strict adherence to oral care rules. Such children are registered with a dentist and belong to the III dispensary group.

Treatment of chronic initial caries is carried out depending on the clinical course by observation, grinding of the affected area or preparation and filling.

In the treatment of surface and medium caries of permanent teeth with unformed roots, it is necessary to treat the tooth tissues carefully during preparation, namely: avoid overheating, exclude the use of antiseptics that have a cytotoxic effect, and also avoid filling materials that can adversely affect the pulp. The choice of filling material is determined by the group belonging to the tooth and the stage of tooth development.

A feature treatment of acute deep caries is incomplete removal of softened dentine from the bottom of the carious cavity. Preparation of the bottom should be carried out carefully with an excavator and a ball bur of the appropriate size at low revolutions of the drill. The walls, on the other hand, are carefully prepared to a dense, unchanged color dentin. They carry out antiseptic treatment with drugs that do not have a cytotoxic effect on pulp cells. In addition, a therapeutic pad is placed on the bottom, which has an odontotropic effect.

Treatment of chronic deep caries of permanent teeth in children does not cause difficulties, since the pulp is protected by a layer of secondary dentin. During preparation, you can leave pigmented dense dentin at the bottom of the carious cavity.

medical pads in the treatment of chronic deep caries. Instead, an insulating gasket made of phosphate cement is used. Such treatment is carried out in one visit.

Permanent teeth with incomplete root formation differ from teeth whose development is complete. They have a relatively thin layer of hard tissues, they contain a smaller amount of mineral salts and are considered immature. Caries in such teeth develops faster, bacterial toxins more easily penetrate deep into tissues, reach faster pulp

In the process of practical work, students examine a child, fill out an outpatient clinic map, make a preliminary diagnosis, prescribe additional examination methods and draw up a treatment plan. The results of the curation are discussed with the teacher, the diagnosis is clarified, and only then the carious preparation is performed cavities

Control of the level of knowledge acquisition:

1. Pathogenetic mechanisms of caries development of permanent teeth in children.
2. Peculiarities of caries of permanent teeth in children depending on the stage of tooth formation.
3. Peculiarities of the clinical course of initial caries of permanent teeth in children.
4. Peculiarities of the clinical course of superficial caries of permanent

teeth in children. 5. Features of the clinical course of medium caries of permanent teeth in children.

6. Features of the clinical course of deep caries of permanent teeth in children.

7. Diagnosis and differential diagnosis of initial caries of permanent teeth in children.

8. Diagnosis and differential diagnosis of medium caries of permanent teeth in children.

9. Diagnosis and differential diagnosis of deep caries of permanent teeth in children.

Oriented test tasks:

1. *How many teeth has a permanent bite formed in a 14-year-old girl child:*

- A. 28.
- B. 20.
- C. 24.
- D. 32.
- E. 16.

2. *Setting of permanent teeth is taking place on:*

- A. 4th month of intrauterine development child
- B. 1st month of intrauterine development child
- C. 8th month of intrauterine development child
- D. 2nd year of life child
- E. In the neonatal period.

3. *In constant bite first are laid:*

- A. The first molars
- B. Fangs
- C. cutters
- D. Others molars
- E. The first molars

4. *Mineralization of the first permanent molars begins:*

- A. At 24-28 weeks of gestation development
- B. In the 4th week of pregnancy development
- C. At 16-18 weeks of gestation development
- D. In the 8th week of pregnancy development
- E. After birth child

5. *Mineralization of the tooth begins with:*

- A. Enamel.
- B. Cement.
- C. From the enamel-dentine border.
- D. Made of raincoat dentin
- E. From the outer layer pulp

6. *The central permanent lower incisors erupt in average:*

- A. At 6-7 years

- B. In 2 years
 - C. At 8 years
 - D. At 9 years
 - E. At 10 years
7. *The first in permanent bite cut through:*
- A. Central and first incisors molars
 - B. Central incisors and lateral
 - C. Premolars.
 - D. Fangs
 - E. Others molars
8. *Formation of the root of a permanent tooth happens:*
- A. Begins before hatching and lasts 4 years
 - B. Before cutting tooth
 - C. After eruption of a tooth within 1 year
 - D. Within 2 years after cutting
 - E. For 4 years after cutting
9. *The final stage of formation of the root of a permanent tooth is:*
- A. Closure of the apical opening
 - B. Formation tops
 - C. Forming 2/3 of the length the root
 - D. Unformed periodontium
 - E. End of formation near the apical periodontium
10. *On the radiograph, the unformed root looks like:*
- A. Crater-like expanded to tops
 - B. Sand clock
 - C. Narrowed to tops
 - D. shortened
 - E. Whirling.

PRACTICAL LESSON #5

Lesson topic: Preparation and filling of carious cavities in various forms of caries. Selection of sealing materials. General treatment of caries: planning, methods.

The aim: To study the peculiarities of treatment of permanent teeth in childhood.

Actuality: To learn to prepare and fill permanent teeth in children of different ages.

Control of the initial level of knowledge:

1. Chemical composition of solid fabrics tooth
2. Concepts of "de-" and "remineralization" of enamel, homeostasis enamel
3. The prevalence and intensity of caries of permanent teeth in children

is different age

4. Epidemiological indicators of caries teeth
5. Caries risk factors teeth
6. Cariesogenic situation in the cavity mouth
7. Classifications of dental caries.

Lesson content:

Demineralization and remineralization of enamel are processes that constantly occur and are concepts that are parallel and balanced among themselves. Under action various factors risk in enamel start prevail phenomena demineralization that _ leads to development caries _ It should be noted that the frequency of caries in children is not the same in different age periods . The highest prevalence of this pathology of the hard tissues of the teeth is in children 6-7 years old (in temporary teeth). With age , the frequency of caries decreases due to physiological changes in the teeth. At the age of 7, caries of permanent teeth occurs in 50% (especially in molars). The highest frequency of caries in permanent teeth is observed in 12-year-old children. Separately, it should be emphasized that tooth decay at 12 years of age reflects the effectiveness of preventive measures.

Treatment of surface enamel caries consists in the use of means and remineralization therapy.

Treatment of dentin caries is carried out by the method of preparation and filling of the carious cavity. Depending on the depth and activity of the carious process, the preparation (excavation of dentin) of the carious cavity may occur with complete or partial removal of the affected tissues.

Dentin caries, which can be classified as medium (damage to shallow layers of dentin), is treated by the method of complete removal of the affected dentin (complete dentin excavation) within healthy tissues and filling of the carious cavity in one visit.

Excavation of dentin in the treatment of deep caries in an acute form is carried out partially (incomplete excavation of dentin), since the complete removal of softened (infected/demineralized) dentin from the bottom of the carious cavity can lead to the opening of the pulp chamber of the tooth. Affected enamel and dentin on the walls of the carious cavity, on the other hand, are completely removed! The dentine of the bottom of the carious cavity is usually covered with a medical pad, and the cavity is sealed with glass ionomer cement. After 6-8 weeks, the carious cavity is re-prepared to hard tissues and the tooth is restored. This method is called the method of staged / two-stage preparation. The technique of one-stage preparation in the treatment of deep caries occurs in the same way as in the case of two-stage preparation, that is, without removing the affected dentin of the bottom of the carious cavity, however, after partial preparation of the dentin, permanent restoration of the carious cavity is performed without replacing it after 6-8 months.

The method of partial removal of the affected dentin is especially recommended in the treatment of deep caries of teeth with incomplete root formation, as intervention in the pulp of these teeth is highly undesirable. In addition, the reparative potential of dental pulp with unformed roots is higher

compared to the regenerative properties of dental pulp with complete root formation, which is a favorable prognostic sign.

In the case of treatment of acute deep caries in children, dynamic observation of the treated teeth should be carried out with periodic monitoring of the condition of the pulp and periodontal tissues. This observation should be carried out 1, 6, 12 months after treatment.

If during the treatment of acute deep caries of a tooth with a formed root, the pulp cavity is opened during the sparing preparation of the carious cavity, the intensity of bleeding from the place of connection with the pulp should be evaluated and a decision should be made regarding the possibility of preserving the pulp in this tooth.

If the connection with the pulp cavity occurred in a tooth with an unformed root, one should always try to carry out pulp-preserving treatment in this tooth, at least until the moment of root formation (partial or complete vital pulpotomy). After the completion of root formation, such teeth may require classical endodontic treatment, the need for which is determined in the process of dynamic observation.

Treatment of chronic deep caries of permanent teeth in children does not cause difficulties, since the pulp is protected by a layer of secondary dentin. Pigmented dense dentin can be left at the bottom. No special medical pads are needed. At the same time, only an insulating gasket made of phosphate cement is applied. Such treatment is carried out in one visit.

Today, there are two options for the formation of carious cavities. The first is the classic formation of the carious cavity according to Black, the second is the preparation of the carious cavity of a free design. Dissection according to Black involves dissection of not only the affected tissues, but also the creation of retention cavities to hold the filling. These principles of steaming carious cavities were proposed by Black more than a hundred years ago, when the dentist's arsenal for filling cavities contained only cements that did not have adhesive properties. This is the reason for the need to create additional retention surfaces when preparing a carious cavity for filling. Since the introduction of restorative materials with adhesive properties into dental practice, the need for additional retention cavities has disappeared and the principles of cavity preparation have changed. Today, the technique of free design preparation of the carious cavity, which involves a more economical removal of only cariously affected tissues, has become widely used.

Principles of preparation according to Black.

During the formation of a Class I cavity according to Black, it is assumed that all fissures of the masticatory surface, even those not affected, are involved in a single cavity, especially in permanent teeth with incomplete root formation. In the upper permanent molars, the affected fissures can be prepared separately, without connecting them one

During the formation of a class II cavity in permanent molars, especially in premolars, the formation of an auxiliary cavity on the chewing surface is mandatory. The formation of such an additional cavity usually occurs in the form of a dovetail.

III cavities, as a rule, do not require the formation of auxiliary retention points, however, for preparation, trapezoidal (inverted cone) burs are used, which, by their shape, create walls that converge and thus contribute to the retention of the

filling.

Cavities of class IV are more difficult to form, when an auxiliary plane is formed from the palatal side, also in the form of a swallow's tail.

The formation of carious cavities of the V class does not cause difficulties. Bores in the form of an inverted cone are also used for shaping. Sometimes the overhanging edge of the gums, which often bleeds, interferes with the formation of the periodontal wall. It should be compacted with caustic agents (Vagotil, Ferezol) or diathermocoagulation should be performed under application anesthesia. Sometimes it is necessary to use a retraction thread.

Preparation of carious cavities of free design occurs within healthy tissues, however, without the formation of additional retention cavities.

In the process of practical work, students examine a child, fill out an outpatient clinic map, make a preliminary diagnosis, prescribe additional examination methods and draw up a treatment plan. The results of curation are discussed with the teacher, the diagnosis is clarified, and only then the carious cavity is prepared.

Preparation of carious cavities of free design occurs within healthy tissues, however, without the formation of additional retention cavities.

Control of the level of knowledge acquisition:

1. Classification of carious cavities according to Black.
2. Stages of preparation of carious cavities
3. Terms of formation of permanent roots teeth
4. Means for carrying out remineralization therapy
5. Features of the caries clinic of permanent teeth in children
6. Acute initial caries of permanent teeth. His treatment.
7. Chronic initial caries of permanent teeth. Him treatment
8. Treatment of surface and medium caries of permanent teeth.
9. Deep caries of permanent teeth. Him treatment.
10. Peculiarities of the preparation of carious cavities of the 1st class according to Black of permanent teeth.
11. Peculiarities of the preparation of permanent carious cavities of the II class according to Black teeth
12. Peculiarities of the preparation of permanent carious cavities of the III class according to Black teeth
13. Peculiarities of the preparation of permanent carious cavities of the IV class according to Black teeth
14. Peculiarities of the preparation of carious cavities of class V according to Black permanent teeth

Oriented test tasks:

1. *A 13-year-old child complains about the presence of cavities in the front teeth of the upper jaw. On the medial contact surfaces of teeth 11 and 21, carious cavities were found within the mantle dentin, filled with dense pigmented*

dentin. Probing the bottom of carious cavities is painless, percussion of the teeth is painless, there is no reaction to thermal stimuli. Choose the optimal filling material for permanent seal

- A. Composite material.
- B. Silicate cement. C. Silico-phosphate cement. D. Zinc-phosphate cement.
- E. Glass ionomer cement.

2 *11 -year-old girl complains of a toothache on her upper jaw while eating , which quickly resolves after the stimulus is removed. Objectively: in 46, a carious cavity within the peripulpal dentin, the dentin is softened, probing the bottom is painful, percussion is painless. Which paste is the most optimal to use in this case?*

- A. Calcium-containing paste.
- B. Thymol paste.
- C. Resorcin-formalin paste.
- D. Iodoform paste.
- E. Zinc-eugenol.

3 *patient is 7 years old. Complaints of pain while eating in the area of the 36th tooth. Objectively: tooth 36 has a deep carious cavity, the cavity of the tooth is closed, probing the bottom is sharply painful. Pains from temperature stimuli pass quickly, percussion is negative. Choose a paste to treat this tooth*

- A. Based on calcium hydroxide.
- B. Paraformaldehyde paste. C. Resorcin-formalin paste. D. With the addition of corticosteroids.

4 *A 13-year-old girl complains of cold pain in the 46th tooth. There was a tooth six months ago filled, the filling fell out and the tooth began to react to thermal stimuli. Objectively: on the chewing surface of tooth 46 , there is a deep carious cavity filled with softened dentin. Probing the bottom is painful, the reaction to a cold stimulus is painful, but quickly disappears after its elimination. Choose the most optimal medical paste.*

- A. Contains hydrocalcium. B. Timolova.
- C. Iodoformna.
- D. Corticosteroid.
- E. Zinc-eugenol.

5 *An 8-year-old boy complains of acute short-term pain at 11 from cold and sweet. Objectively: in 11 , a carious cavity on the media contact surface within the enamel-dentine connection is filled with softened moist dentin, which is easily removed in layers. The edges of the enamel are white , chipped, and fragile. Surface probing is painless, thermometry is positive, percussion is negative. Choose sealing material.*

- A. Glass ionomer cement. B. Silico-phosphate cement. C. Composite material.

- D. _ Silver amalgam.
- E. Silicate cement.

6 *During the examination of a 9-year-old child in the cervical area 12, 11, 21, 22, chalk-like spots that appeared 2 weeks ago were found. Spots without*

shine, with a surface that is stained with methylene blue

*Cold irritant does not cause a reaction of the affected teeth.
What should be the doctor's tactics in relation to the injured teeth?*

- A. Remineralizing therapy.
- B. Impregnation therapy.
- C. Polishing of damaged areas.
- D. _ Dispensary observation.

7. A 6-year-old child turned to a pediatric dentist for a preventive examination. Objectively: the oral cavity is clean. 16, 26, 36, 46 teeth are intact, erupted 3 months ago. Which of the known methods of caries prevention is appropriate use?

- A. Sealing of fissures of teeth.
- B. Applications with a 10% solution of calcium gluconate.
- C. Iontophoresis with 1% NaF solution .
- D. Coating with fluoride varnish.
- E. Reception of the drug "Vitafor".

8. The parents of a 6-year-old child turned to a pediatric dentist for the purpose of a preventive examination of the child. The oral cavity is cleaned. Recently, according to the parents, the child had teeth 36 and 46. Which of the caries prevention methods is most appropriate to use in the first 1.5-2 years after teething teeth?

- A. Sealing of fissures.
- B. Silvering of fissures.
- C. Coating of teeth with fluoride varnish.
- D. Applications with a remodent solution.
- E. Rinsing with sodium fluoride.

9. 11-year-old boy has pain in the area of the 24th tooth when taking sweet and cold food. The pain first appeared three weeks ago. Objectively: on the chewing surface 24 a carious cavity of medium depth, filled with light, softened dentin. Probing of the enamel-dentine connection is painful, from a cold stimulus – short-term pain. Percussion 24 is painless. What sealing cement is most appropriate for permanent seals?

- A. Glass ionomer. B. Silico-phosphate. C. Phenolate.
- D. Silicate.
- E. Polycarboxylate.

10. In a 7.5-year-old child, during a preventive examination, a carious cavity with a small entrance hole was found on the chewing surface of tooth 36 in the distal part of the fissure, the probe was stuck in the softened dentin. Choose modern treatment tactics in this case.

- A. Preventive sealing.
- B. Non-invasive sealing.
- C. Invasive sealing.
- D. _ ART - methodology.
- E. Impregnation with silver nitrate solution.

PRACTICAL LESSON #6

Lesson topic: Errors and complications in the treatment of caries in children of different ages. Their prevention and elimination.

The aim: To get acquainted with errors that occur in the treatment of dental caries in young children.

Actuality: To learn to correctly diagnose dental caries in children of different ages and to choose the right treatment method.

Control of the initial level of knowledge:

1. Classification of dental caries .
2. Features of the clinical course of temporary caries teeth
3. Methods of treatment of temporary caries teeth
4. Features of the clinical course of caries of permanent teeth.
5. Methods of treatment of permanent caries teeth
6. Characteristics of filling materials for filling carious cavities depending on the localization of carious process

Lesson content:

During the diagnosis of dental caries in children, the doctor performs a number of various manipulations, not very careful or incorrect execution of which can lead to errors and complications. These errors can occur both during the diagnosis of dental caries in children of different ages, preparation and filling of the carious cavity, and at various times after the filling. Therefore, it is advisable to divide them into errors and complications that occur during the diagnosis of dental caries, during the preparation and filling of the carious cavity, and errors and complications that occur after the treatment caries

Errors and complications arising during carious cavity preparation.

1. *Insufficient preparation of the carious cavity.* During the preparation of the carious cavity, it is necessary to carefully remove the necrotic, pathologically changed tissues of the tooth. The remaining areas of softened dentin later lead to the development of secondary caries or inflammation of the pulp - pulpitis. Improper cavity formation leads to cracks in the filling material or chipping of the enamel edge of the walls of the carious cavity. In case of violation of the preparation regime, overheating or burning of hard tissues, overheating of the pulp may occur etc.

2. *Perforation of the bottom of the carious cavity* occurs in case of careless preparation with a drill or an excavator. It is necessary to take into account the topography of the cavities of temporary teeth and pulp horns, the peculiarities of the structure of permanent teeth with an unformed root, which are very easy to perforate during the expansion and formation of a carious cavity. During the perforation of the bottom of the carious cavity, a sharp pain occurs and a drop of blood or serous-bloody fluid appears. If the pulp horn is exposed within the softened dentin, especially in temporary teeth and permanent teeth with an unformed root, this is most often a sign of chronic fibrous pulpitis. If exposure pulp occurred within healthy dentin, the pulp may be preserved by closing the traumatic area with a calcium -containing hardening pad or bioactive calcium silicate cement. In

temporary teeth at the stage of root resorption, devital amputation is performed if the pulp is accidentally exposed .

3. *Break-off of the wall of the carious cavity* can occur as a result of lever-like movements of the excavator or drill, when excessive pressure occurs on one of the walls of the carious cavity cavities

4. *Boron damage to neighboring teeth* can occur during the preparation of carious cavities located on the contact surfaces of teeth, in cases where the rules for removing the carious cavity to the masticatory lingual (palatal) surface are disregarded. 5. *Damage to the gingival margin* occurs during preparation of carious cavities located on the contact surfaces and in the cervical region. In this case, there is pain in the gums and bleeding them

Errors and complications arising during filling of a carious cavity.

1. *Incorrect choice and preparation of filling material.* Incorrect choice of material leads to cosmetic defects, causes rapid destruction and loss of the seal. Disregarding the rules for mixing the sealing material leads to a decrease in the physical and chemical properties and strength of the seal, contributes to its rapid destruction and color change.

2. *Improper application of an insulating gasket* in patients with medium and deep caries can cause toxic or thermal irritation of the pulp. The applied spacer above the enamel-dentine border worsens the marginal fit and fixation of the filling, leads to the occurrence of secondary caries and loss of the filling. Placing a gasket on the vestibular wall of the carious cavity in the front teeth causes the formation of a cosmetic defect (the opaque gasket can shine through the translucent enamel).

3. *Overbite* when filling a carious cavity causes pain and a feeling of discomfort during chewing, constant overloading of the filled tooth can lead to acute or chronic periodontitis .

4. *The absence of a contact point* creates conditions for the accumulation of food residues between the teeth , which injure the interdental papilla and create conditions for the occurrence of caries on the contact surfaces of the teeth, as well as the development of papillitis, gingivitis and periodontitis

5. *Placing one filling in adjacent carious cavities* disrupts the processes of self-cleaning of the interdental space, which can lead to the occurrence of secondary caries and diseases periodontal

6. *Overhanging edges of the filling*, protruding into the interdental space, injure the gums, create conditions for the retention of food residues between teeth

Errors and complications arising after caries treatment.

1. *Inflammation and pulp necrosis.* The causes of this complication can be traumatic preparation of the carious cavity, when there is overheating of the pulp, excessive pressure on the bottom of the carious cavity. Inflammation of the pulp contributes to the treatment of the cavity with toxic or irritating substances medicines (e.g. ethyl alcohol). Permanent filling materials can irritate the pulp in the absence of an insulating pad or if it is applied incorrectly.

2. *The development of secondary caries* usually occurs as a result of violations that occurred during caries treatment. First of all, insufficient removal of necrotized dentin from the walls and bottom of the carious cavity, as well as improper

application of insulating and therapeutic pads. In case of secondary caries, the remains of the filling are removed, the carious cavity is prepared and filled according to the depth, localization and course caries

3. *Papillitis* develops after irrational filling of carious cavities located on the proximal surfaces. It is characterized by edema, stagnant hyperemia and bleeding of the gingival papilla. In most cases, papillitis is caused by the absence of a contact point between the teeth, the ingress of filling material into the interdental space, and the accumulation of food residues in it. Treatment and prevention of papillitis consists in careful and correct restoration of the contact point during filling, which requires the use of matrices, matrix holders, wedges. In case of papillitis, it is necessary to replace the filling, if necessary, carry out anti-inflammatory treatment.

4. *Acute or chronic apical periodontitis* usually develops a few days (acute) or a few months (chronic) after the treatment of the tooth. It is characterized by pain during biting and vertical tooth percussion. During the examination, a filling is found in the diseased tooth, which overestimates the bite. The prevention of this complication consists in a thorough check of the occlusion after applying the seal using copy paper.

5. *A change in the color of the tooth crown* (to gray or dark gray) in most cases is the result of an incorrectly performed necrotomy. Sometimes the discoloration of the crown part of the tooth occurs as a result of the action of the permanent filling material (silver amalgam, insulating materials for spacers containing silver). In the event of a change in the color of the tooth, it is necessary to carry out an X-ray examination for the differential diagnosis of uncomplicated and complicated caries. After that, remove the filling, perform a thorough necrotomy, removing all the discolored dentin from the walls of the carious cavity, and fill the cavity again.

6. *Displacement, fractures and falls fillings* immediately or shortly after application are the most common complications after treatment of dental caries in children. It may be the result of saliva entering the cavity prepared for filling, then the filling falls out almost immediately after treatment. Sometimes this is due to insufficient formation of the carious cavity or inadequate choice of filling material. In such cases, the seal falls out after some time. This is especially characteristic of Class II cavities. The reasons may also be the wrong choice of filling material, violation of the technology of its preparation and application of the filling.

7. *Ineffective medical treatment of initial caries* can be considered as a complication or mistake. It can be a consequence of the wrong choice of tactics, medicinal products, methods of application and duration of treatment. Sometimes this condition worsens due to the lack of appropriate general treatment caries or ineffective individual oral hygiene.

Control of the level of knowledge acquisition:

1. What errors and complications can occur at the stage of diagnosing dental caries in children of various kinds age?
2. Which mistakes and complication arise under time preparation carious cavity?

3. What errors and complications occur during sealing carious cavity?
4. What errors and complications occur after filling carious cavity?
5. What measures are necessary to prevent the occurrence of secondary caries?
6. What must be done to prevent the occurrence of toxic and traumatic pulpitis?
7. Which manipulation, carried out under time treatment caries, they can bring before acute or chronic periodontitis?

Oriented test tasks:

1. *What mistake can a doctor make during the preparation of a carious cavity?*
 - A. Perforation of the carious bottom cavities
 - B. Exaggeration bite
 - C. Lack of contact point
 - D. Applying one filling to adjacent carious fillings cavities
 - E. choice of shaft seal material
- a 2. *What error can occur during the filling of carious cavity?*
 - A. Incorrect choice and preparation of filling material material
 - B. Papillitis.
 - C. Carious wall perforation cavities
 - D. Perforation of the carious bottom cavities
 - E. Falling out seals
3. *36 teeth were treated for acute deep caries, Class I according to Black. What complications can occur after treatment?*
 - A. Acute apical periodontitis
 - B. Insufficient carious preparation cavities
 - C. Gum damage edge
 - D. Improper application of treatment gaskets
 - E. Perforation of the carious bottom cavities
4. *During the preparation of 36 teeth of an 8-year-old child due to acute deep caries, a sharp pain occurred, a drop of blood appeared at the bottom of the carious cavity. What a complication occurred?*
 - A. Perforation of the carious bottom cavities
 - B. Carious wall perforation cavities
 - C. Gum damage edge
 - D. Development of secondary caries
 - E. Fracture of the carious wall cavities
5. *During the preparation of the carious cavity of tooth 26 in a 6-year-old child, a sharp pain arose and a drop of blood appeared at the bottom of the carious cavity. A perforation occurred. What a mistake he made doctor?*
 - A. Did not take into account topographical and anatomical features tooth
 - B. Did not conduct X-ray 26 tooth

- C. Didn't use it rubber dam
- D. Didn't apply insulation gasket
- E. Didn't use it cooling.

6. *A 12-year-old child was diagnosed with acute deep caries of 26 teeth.*

After applying the medical pad, the doctor decided to use an insulating pad. After its application, it is located above the enamel-dentine border. What a mistake he made doctor?

- A. insulating layer should be below the enamel-dentine layer limits
- B. insulation needed gasket.
- C. No treatment is needed gasket.
- D. First , the insulating gasket should be applied .
- E. No need to use insulation gasket

7. *During preparation of 21 teeth, carious cavity V class according to Black, the child complained of sharp pain in the gums and bleeding. What a complication occurred?*

- A. Gum damage edge
- B. Perforation of the carious bottom cavities
- C. Carious wall perforation cavities
- D. damage to the neighbor tooth
- E. Fracture of the tooth wall .

8. *During the treatment of a 5-year-old child with 55 teeth due to chronic medium caries, the doctor performed a filling with glass ionomer cement. After applying the cement , the doctor sent the child home. What a mistake he made doctor?*

A. not determine the height of the bite and did not perform the finishing treatment seals

- B. Do not cover with fluorine varnish.
- C. I didn't choose the filling properly material.
- D. Did not use insulating gaskets
- E. The diagnosis was wrong.

9. *During the treatment of a 5-year-old child with 65 teeth due to chronic medium caries, the doctor placed a filling made of glass ionomer cement. After applying the filling , the doctor sent the child home without finishing the filling and without determining the height of the bite. What complication can develop?*

- A. Acute apical periodontitis
- B. Papillitis.
- C. Secondary caries.
- D. Gingivitis.
- E. Injury mucous

10. *During the preparation of the carious cavity of tooth 54, the doctor left somewhat softened dentin at the bottom. What complication can develop in this case?*

- A. Secondary caries.
- B. Papillitis.
- C. Acute apical periodontitis

- D. Fallout seals
- E. Color change tooth

PRACTICAL LESSON #7

Topic lesson: Non-carious lesions of hard dental tissues in children. Hypoplasia. Fluorosis . Etiology, diagnosis, differential diagnosis, treatment, prevention.

The aim: To study non-carious lesions of hard dental tissues in children, in particular, enamel hypoplasia and fluorosis .

Actuality: To learn to diagnose various forms of enamel hypoplasia and fluorosis ; carry out differential diagnosis of them with other lesions of the hard tissues of the teeth, as well as among themselves; choose the optimal treatment tactics.

Control of the initial level of knowledge:

1. The terms of laying and mineralization are constant teeth
2. Timing of placement and mineralization of temporary teeth.
3. Enamel structure . Physiological properties of enamel; factors that can affect them.
4. Risk factors for the development of pathology of hard tissues that act in the antenatal period

Lesson content:

Non-carious lesions of the hard tissues of the tooth are divided into two groups (M. I. Groshikov, 1985; Yu. A. Fedorov, 1995):

1. *Pathology of the hard tissues of the teeth, which occurs during their period development:*

- enamel hypoplasia teeth;
- hyperplasia teeth;
- fluorosis teeth;
- hereditary malformations teeth;
- medicinal and toxic disorders of tooth tissue development.

2. *Pathology of the hard tissues of the teeth, which occurs after them cutting:*

- pathological weariness teeth;
- wedge-shaped defects teeth;
- erosion teeth;
- medicinal and toxic effect on hard tissues teeth;
- trauma teeth;
- necrosis of hard tissues of teeth.

In the practice of a pediatric dentist, non-carious lesions of the 1st group are most often observed.

Enamel hypoplasia is a developmental defect of tooth enamel characterized by its insufficient formation and mineralization. The etiological factor

that contributes to the development of enamel hypoplasia is the insufficient function of ameloblasts, which occurs in connection with a violation of metabolism in the entire body of the child under the influence of various diseases, or as a result of a violation of metabolism in individual follicles under the influence of mechanical trauma, infection, increased radiation, etc. .

Both milk and permanent teeth are affected by hypoplasia. The causes of milk teeth are significant metabolic disorders in the mother's body during pregnancy (gestosis), in permanent teeth - acute infectious diseases in the embryonic and post-embryonic periods, toxic dyspepsia, endocrine disorders, hypo- and vitaminosis (A, D, C). .

Systemic and local hypoplasia are distinguished by origin.

Local enamel hypoplasia is most often observed on premolars, sometimes on permanent incisors. 1-2 teeth are affected.

Reasons:

- trauma (jammed dislocation of a temporary tooth, which leads to damage to the permanent follicle tooth);
- inflammatory process in the periodontium of the temporal tooth ;
 - slight damage to the enamel (white, yellow, brown spot);
 - severe enamel disorders (change in the structure of hard tooth tissues (Turner's tooth).

Systemic hypoplasia enamel characterized by damage group _ _ teeth, intramaxillary mineralization of which occurs simultaneously. First permanent molars and incisors of the upper and lower jaw are most often affected. According to clinical manifestations, three forms of systemic hypoplasia are distinguished:

1. A change in the color of the enamel (spotted form) appears in the form of symmetrical white spots of different shapes on the teeth of the same name . Spots with clear edges; a smooth, shiny surface that does not stain with methylene blue

2. Insufficient enamel development (grooved form). Clinical manifestations are different - wavy, grooved and dotted enamel. Spotted is found more often than others a form of enamel hypoplasia. With this defect, the enamel has the appearance of dot depressions, which are located on the vestibular and lingual surfaces at different levels in different groups teeth

3. Complete absence of enamel (aplasia) in a certain area of the crown. Such defects have a different shape, often rounded, the size and depth of which are also different. With this form, there may be complaints of pain from irritants, which pass after their elimination. Clinically, this is manifested by the absence of enamel in a certain area of the crown, and more often - at the bottom of the cup-like recess or in the groove covering the crown tooth

Varieties of systemic hypoplasia there are teeth with a change in shape crowns:

□ Hutchinson's tooth - a barrel-shaped medial upper incisor with a crescent notch on the incisor edges;

□ Fournier's tooth is a medial upper incisor with a screwdriver - shaped crown. These types of pathology are observed as a result hereditary syphilis, which is confirmed by Hutchinson's triad : parenchymal keratitis, deafness, Hutchinson's

teeth;

□ teeth . Found in the first molars, which have a cone-shaped shape, the tubercles are underdeveloped and converge, are also a consequence of syphilitic infection;

Treatment depends on the severity of hypoplasia. The local type of hypoplasia may not be treated. If the stain is the cause of a cosmetic defect, it can be eliminated by preparation and filling with composite materials.

Before starting restoration work, a course of remineralization therapy should be conducted to replenish the mineral composition of underdeveloped enamel. Remineralizing therapy to some extent depends on the severity of hypoplasia. At the same time, remineralizing therapy is an effective preventive measure for the development of dental caries, because with unfavorable oral hygiene, as well as insufficient mineralizing properties of the oral fluid, reduced adaptation possibilities organism - different forms hypoplasia they can to complicate dental caries.

Remineralization therapy is carried out according to generally accepted methods.

In particular, they use:

□ covering destroyed areas of enamel with fluorine-containing varnishes, gels;

□ deep fluoridation of open hypoplastic defects and subject areas restoration

Fluorosis is a type of enamel hypoplasia that occurs as a result of an excess of fluoride ions, which inhibit ameloblasts during the period of intramaxillary tooth formation and mineralization . Fluoride concentration in drinking water of 2 mg/l or higher contributes to the spread of fluorosis and the severity of its course. The degree of damage to the teeth by fluorosis depends on the concentration of fluoride in drinking water : at a concentration of 1.5-2 mg/l, I- II degree of fluorosis occurs, if the concentration of fluoride exceeds 2 mg/l, fluorosis of III-I V degree of severity occurs. If the concentration of fluoride in drinking water is 6 to 15 mg/l, 90-100% of the population is affected by fluorosis, with a predominance of severe forms, significantly increased wear and fragility of its teeth. In Ukraine , fluorosis occurs in Odesa, Lviv, and certain districts of Poltava region

In addition to the changes that are taking place in the hard tissues of the teeth, when using an excess of fluoride (3-15 mg/l) with drinking water, general changes occur in the child's body . Thus, there is a violation of the development and mineralization of bones, suppression of thyroid function, changes in the activity of certain enzyme systems of the blood, changes in the myocardium, suppression of the bioelectric activity of the brain , as well as disturbances on the part of other internal organs (for example, the liver).

It should be emphasized that fluorosis affects the permanent teeth (rarely milk) of children who live in a region endemic for fluorosis, from birth or from the age of 3-4 years. With a slight increase in the concentration of fluorine in drinking water, only the incisors are affected, with a significant increase – all the teeth.

Depending on the clinical manifestations, the following forms of fluorosis are distinguished: streaked, spotted, chalk-spotted, erosive and destructive. The first three forms are not accompanied by loss of tooth tissue, the last two lead to loss of hard tooth tissue.

Depending on the clinical form of the disease, the children's dentist chooses treatment tactics. Thus, in the presence of only pigment spots on the surface of the tooth, some authors recommend the method of teeth whitening (using whitening agents containing sodium citrate, 10% carbamide peroxide) followed by remineralization therapy. For cleaning teeth affected by fluorosis, pastes with a remineralizing effect (Remodent) without fluoride should be recommended.

This disease is differentiated from caries in the spot stage, from the spotted form of systemic hypoplasia; more severe ones should be differentiated from surface caries, erosions, wedge-shaped defect, etc.

Special emphasis should be placed on measures to prevent fluorosis, which should be carried out in areas with high fluoride content in drinking water and should be especially intensive during the period of formation and mineralization of permanent teeth. They are divided into collective, aimed at reducing the content of fluoride in drinking water, and individual preventive measures, which should be carried out from the birth of a child and include the use of imported water for cooking, and juices and milk for drinking instead of water. In addition, calcium preparations should be used internally, ascorbic acid, calciferol according to age. Do not use products with high fluoride content (marine fish, meat wings, marine cabbage etc). Especially important there is the removal of children for the summer period from endemic fluorosis district

Changes in enamel occur with pathological shifts and ectodermal cell formations. Other mutations cause changes in other tissues. In general, these mutations lead to one thing from the following consequences: insufficient formation of enamel (hypoplasia), marked insufficiency of primary calcification of the organic matrix (hypocalcification), hypomaturation of enamel, a combination of these disorders. Those hereditary disorders of enamel that are not associated with general disorders are varieties of defective amelogenesis.

In the process of practical work, students' anamnesis is collected, and special attention is paid to the geographical features of the area where the patient lives, a diagnosis is made, differential diagnosis is made, and prescriptions are written.

Control of the level of knowledge acquisition:

1. Enamel hypoplasia: definition; etiological factors; classification.
2. Systemic hypoplasia: definition, clinical forms
3. Local hypoplasia: definition, clinical forms
4. With which diseases and on the basis of which signs should differential diagnosis of hypoplasia be carried out enamel?
5. What are the tactics of a pediatric dentist during treatment hypoplasia?
 1. Prevention of local and systemic hypoplasia. Fluorosis. Cause of occurrence. Classification.
 2. Stroke form of fluorosis. Clinic. Diagnostics.

3. Spotted form of fluorosis. Clinic. Diagnostics.
4. Chalky-speckled form of fluorosis. Clinic.
5. Erosive form, fluorosis. Clinic. Diagnostics.
6. Destructive form of fluorosis. Clinic. diagnostics,
7. With which diseases and on the basis of which signs it is necessary to carry out differential diagnosis fluorosis?

In the process of practical work, students they collect an anamnesis, paying special attention to the geographical features of the area where the patient lives, establish a diagnosis, carry out differential diagnosis, prescribe prescriptions.

At the end of the class, the teacher sums up, checks the medical documentation, and announces grades.

Oriented test tasks:

1. *A 14-year-old patient complained about an aesthetic defect. Objectively: a screwdriver-shaped central incisor . There is a history of hereditary syphilis, which is confirmed by the Hetchinson triad . Put diagnosis.*

- A. Tooth Fournier.
- B. Tooth Hutchinson.
- C. Tooth Pfluger.
- D. Tooth Turner.
- E. Aplasia enamel

2 *The parents of a 9-year-old child turned to a dentist for the purpose of cleaning the oral cavity. Objectively: the first molars have a cone -like shape, the tubercles are underdeveloped and converge. Put diagnosis.*

- A. Teeth Pfluger.
- B. Tooth Hutchinson.
- C. Tooth Fournier.
- D. Tooth Turner.
- E. Aplasia enamel

3 *The parents of a 10-year-old child complain about the presence of a defect in the 11th tooth. Objectively: barrel-shaped central incisor with a crescent notch on the cutting edge. Put diagnosis.*

- A. Tooth Hutchinson.
- B. Tooth Pfluger.
- C. Tooth Turner.
- D. Tooth Fournier.
- E. Aplasia enamel

4 *During the rehabilitation of the oral cavity of an 8-year-old child, it was found that the crown of tooth 36, 46 had changed in size (the crown near the neck is larger than the chewing surface). History of syphilis. What is the most likely diagnosis?*

- A. Teeth Pfluger.

- B. Tooth Turner.
- C. Tooth Fournier.
- D. Tooth Hutchinson.
- E. Aplasia enamel

5 *The parents of a 12-year-old child complain about a cosmetic defect.*

Objectively: there are white spots on the vestibular surfaces of the incisors of the lower jaw, the enamel layer is smooth, shiny, and does not stain with methylene blue. Which is the most likely diagnosis?

- A. Hypoplasia enamel
- B. Surface caries.
- C. Average caries.
- D. Fluorosis.
- E. Initial caries.

6 *A 16-year-old boy was diagnosed with enamel hypoplasia of 11 teeth.*

Because of the cosmetic defect, it was decided to eliminate it by dissection and aesthetic restoration of the anatomical shape with the help of a composite material. What needs to be done before restoring the injured tooth?

- A. Remineralizing course therapy
- B. Rinsing the oral cavity with a toothpick elixir
- C. dental hygiene of the oral cavity powder
- D. Professional oral hygiene.
- E. Use of solid food

7 *A 16-year-old boy was diagnosed with enamel hypoplasia of 11 teeth.*

Treatment: it was decided to eliminate by preparation and restoration of anatomical shape using composite material. Is it exogenously used as a remineralizing therapy? (2 answers A and B)

- A. Covering damaged areas of enamel with fluorine-containing varnishes, gels
- B. Deep fluoridation of open hypoplastic defects and areas to be treated restoration
- C. Vitamin A, IS.
- D. "Biotritdenta".
- E. Calcium-containing preparations "Calcit", "Calcemin".

8 *A 16-year-old boy complains about the presence of a stain on the vestibular surface of the 11th tooth. Objectively: in the area of the cutting edge of the 11th tooth, a bright yellow spot with clear contours was found. The diagnosis was established: enamel hypoplasia. Treatment: it was decided to eliminate by dissection and restoration of the anatomical shape with the help of composite material. Endogenously used as remineralizing therapy: (2 answers A and IN)*

- A. "Biotritdenta"
- B. Calcium-containing preparations "Calcit", "Calcemin".
- C. Covering damaged areas of enamel with fluorine-containing varnishes, gels
- D. Deep fluoridation of open hypoplastic defects and areas to be treated restoration

9 The parents of an 11-year-old child complain about discoloration and the presence of a defect in the crown of the permanent teeth that erupted with damage. The diagnosis was established: enamel hypoplasia of 11, 12, 21, 22 teeth. What are the complications of hypoplasia enamel?

- A. Caries.
- B. Erosion enamel
- C. Trauma teeth
- D. Wedge-shaped defect.
- E. Pathological weariness teeth

10 During a preventive examination by a dentist, an 8-year-old child was found on the vestibular surface of the enamel of the frontal incisors to have pearly white spots, shiny, painless during probing. Stains are not stained with a 2% solution of methylene blue. The diagnosis was established: enamel hypoplasia of 11, 12, 21, 22 teeth. This is a pathology that occurs:

- A. To cutting
- B. After cutting
- C. During cutting
- D. A tooth that has been cut, is not formed root.
- E. Erupted tooth, formed root.

PRACTICAL LESSON #8

Lesson topic: Hereditary malformations of hard tooth tissue development: amelogenesis imperfecta, dentinogenesis, Stanton-Kapdepon dysplasia. Clinic, diagnosis, tactics of a pediatric dentist.

The aim: To study the types of hereditary defects in the development of hard tissues tooth

Actuality: To get acquainted with the clinical manifestations and diagnostic criteria of hereditary defects of the development of hard tissues of the teeth. Learn to choose the right treatment tactics.

Control of the initial level of knowledge:

1. What is the origin of tooth tissues? What are the stages of development tooth?
2. The terms of bookmarking, mineralization and cutting are temporary teeth
3. The terms of laying, mineralization and cutting are permanent teeth
4. Risk factors for the development of pathology of hard tooth tissues in the antenatal period.
5. Prevention of defects in the development of hard tooth tissues in the antenatal period period

Lesson content:

Anomalies of the structure and malformations of the teeth arise as a result of odontogenesis disorders under the influence of a mutagenic factor. A distinction is made between gene and chromosomal mutations. Actually, gene mutations can

affect the development of enamel and dentin, passing down from generation to generation. Inheritance can be traced by studying the pedigree of the proband (the so-called clinical genealogical method). It should be emphasized that the clinical forms of anomalies of the structure and defects of tooth development can be sporadic, combined with anomalies and defects of the face and jaws, and also be a reflection of the patterns of the pathogenesis of systemic diseases of the child.

Imperfect amelogenesis refers to genetically determined defects in the enamel of milk and permanent teeth, which are characterized by a systemic violation of its structure and mineralization, a change in color with subsequent partial or complete loss of the enamel coating. Pathomorphologically, insufficient maturity of enamel, hypomineralization, disorientation of prisms, etc. are revealed.

The following types of imperfect amelogenesis are distinguished:

1) hypoplastic - characterized by a violation of the formation of enamel and its calcification. Due to insufficient formation, the enamel has a smaller thickness, its surface is smooth or unequal; possible delay in teething and resorption of teeth that have not yet erupted; often combined with an open bite.

2) hypocalcification - characterized by a violation of enamel calcification processes during the normal formation of the enamel matrix. Enamel is of normal thickness, has an uneven surface, is dark yellow or brown, is softer and easily chips; often combined with open bite

3) hypomaturation - characterized by a violation of the formation and primary mineralization of the enamel matrix; enamel of normal thickness, but little mineralized, quickly absorbs pigments, changed color

Treatment of imperfect amelogenesis involves restoration of function and aesthetics and requires a comprehensive approach. Restoration of tooth crowns can be carried out by methods of direct (composite restorations) and indirect (veneers, crowns) restoration. Sometimes it is advisable to use temporary restorations for the period of orthodontic treatment or until the teeth have fully matured: they can be thin-walled metal crowns on molars, direct restorations made of composite material or glass ionomer cement, preferably hybrid. The service life of direct restoration in such cases may be short considering its large area, however, this method of tooth restoration is more gentle compared to prosthetics. A course of remineralizing therapy followed by direct restoration can be considered as a temporary measure, since the inferiority of the structure and mineralization of the hard tissues of the tooth calls into question the quality of adhesion between the filling material and tooth tissues. From the beginning, a part of such patients needs orthopedics in the future treatment.

While imperfect amelogenesis is a consequence of pathological changes in the ectoderm, hereditary dentin lesions are associated with pathological changes in the mesoderm.

Imperfect dentinogenesis is a hereditary disease of dentin, which is characterized by a violation of dentin formation at the stage of tissue differentiation: amorphous, disorganized, atubular dentin with a high content of organic substances is formed. Dentin dysplasia is characterized by changes in the near-pulpal dentin and root morphology. Imperfect dentinogenesis is often combined with hereditary imperfect osteogenesis, which is characterized by a triad: pathological bone fragility

(in 60% of patients), hearing loss (in 20%), blue-blue color of the sclera. Clinical symptoms of imperfect dentinogenesis are gray, watery-gray or mother-of-pearl color of the teeth. Teeth quickly wear down and become mobile, which leads to their early loss. Dentin is softened. There may be no structural changes in the enamel, however, due to the weak connection with the dentin, it quickly chips (within 2-4 years from the moment of eruption). X-rays revealed a significant shortening of the roots, a change in their shape, foci of destruction of bone tissue in the area of the tops of the roots, the cavities of the teeth were obliterated.

Imperfect dentinogenesis type I is combined with imperfect osteogenesis. Osteogenesis imperfecta is a hereditary disease (autosomal dominant type) caused by an abnormality of osteogenesis. Signs: blue sclerae, pathological bone fragility, hearing loss, enlarged frontal and temporal areas of the skull, wedge-shaped or concave sternum. The teeth are watery-gray, possibly pearly in color, and wear quickly. Temporary and permanent teeth are affected, bulbous shape of teeth, fractures of their roots are possible.

Imperfect dentinogenesis type II - hereditary opalescent dentin, "crowned teeth", Stanton-Capdepon syndrome.

The disease is usually not combined with a general illness. The color of the enamel is watery-gray, egg-white, purple-blue, the teeth are opalescent or transparent, sometimes the purple color of the crowns is possible, short bulbous roots are possible. Enamel tends to chip 2-4 years after eruption. Increased abrasion of the occlusal surfaces of the teeth (up to complete abrasion in 2 years). Staining of exposed dentine in brown color. Decreased electroexcitability of the pulp. Damage to both temporary and permanent teeth. Possible delay in the resorption of the roots of temporary teeth. Caries is rarely observed.

Type III dentinogenesis imperfecta is an isolated hereditary form of "guilty" opalescent dentin. It is rarely observed. Crowns of teeth, especially permanent ones, can be bell-shaped. Multiple openings of tooth cavities, especially in temporary teeth.

Dentin dysplasia type I. (dentine dysplasia of the roots, "rootless teeth". The term was proposed in 1973 by Shields E. _ D. _ and co-authors. The type of inheritance is autosomal dominant, the frequency of observation is 1:100,000. Clinically: the crowns are not changed, sometimes the color is slightly changed, the roots of temporary teeth can be so underdeveloped that it leads to their rapid loosening and falling out. Caries is rarely observed. X-ray: underdeveloped tooth roots with pointed tips, reduction of growth zones. In temporary teeth - complete obliteration of tooth cavities; in permanent ones - obliteration or atypical shape of the tooth cavity - in the form of one or more arc-shaped cracks. Pseudotaurodontism is an excessively large distance from the occlusal surface of the molar crown to this bifurcation in the case of an obliterated tooth cavity. Often there are foci of bone destruction with distinct borders around the roots. The location of the vertices between the alveolar septa below the enamel-cement junction. Possible osteosclerosis of the alveolar bone and skeletal abnormalities.

Dysplasia of dentin type II - dysplasia of dentin of crowns.

Clinical signs - discoloration of temporary teeth - teeth are amber,

opalescent. Permanent teeth of normal color, brown color is possible. Radiologically permanent teeth may have enlarged crown cavities, concretions in the pulp, narrow root canals, areas of lightening of the tops of intact teeth may rarely be observed.

Treatment of degenerative dentine diseases. If the appearance is not changed, no restorative treatment is required. Difficulties arise if such teeth need to be treated endodontically, restored using indirect methods.

Control of the level of knowledge acquisition:

1. Classification of hereditary defects in the development of hard tissues of the tooth, their etiology and pathogenesis.
2. Amelogenesis imperfecta: morphological changes in hard tissues tooth
3. Clinic and diagnosis of imperfection dentinogenesis.
4. X-ray picture with imperfect dentinogenesis.
5. Stanton-Kapdepon syndrome: clinic, diagnosis
6. Principles of treatment of hereditary malformations of hard tissues tooth

Appropriate test tasks:

1. *A 13-year-old girl complains about the presence of defects on her teeth. Objectively: KPV=0; orthognathic bite; crown parts of teeth of correct shape and normal size; enamel is white and shiny; on the surface of the teeth, longitudinal furrows are densely placed within the enamel, due to which it looks grooved. Determine the type of imperfect amelogenesis.*

- A. Hypoplastic.
- B. Hypomaturational.
- C. Hypocalcification.
- D. Hypomaturational with taurodontism.
- E. Erosive and destructive.

2. *A 15-year-old child complained about the darkening of the 11th tooth, which was treated for an injury in the district polyclinic. From the words of the patient, it became clear that the doctor failed to "pass" the root canal. Objectively: all permanent teeth are intact, have normal shape and size; the bite is deep. Radiologically: the root canals of the upper incisors are not detected, the roots are shortened. What hereditary disease does this symptom indicate?*

- A. Dentin dysplasia I type
- B. Amelogenesis imperfecta.
- C. Syndrome Stanton-Capdepon.
- D. Imperfect dentinogenesis.
- E. Marble disease.

3. *The parents of a 5-year-old child complained about increased grinding of teeth. Objectively: the crowns of milk teeth are worn almost to the level of the gums, their surfaces are watery-brown, shiny, hard; probing is painless, reaction to temperature stimuli absent X-ray: the cavities of all temporary teeth are obliterated. What disease can you think of?*

- A. Imperfect dentinogenesis.
- B. Systemic hypoplasia enamel
- C. Plural caries.
- D. Pathological erasure teeth
- E. Amelogenesis imperfecta.

4. *The mother of a 3-year-old child complains of discoloration and wear of teeth she. It is known from the anamnesis that the enamel began to chip after some time after teething. Objectively: the crowns of all teeth are yellow-gray in color and have been eroded to 1/2 the height. Install the previous one diagnosis.*

- A. Syndrome Stanton-Capdepon.
- B. Amelogenesis imperfecta.
- C. Imperfect dentinogenesis.
- D. Systemic hypoplasia enamel
- E. Pathological erasure teeth

5. *A 12-year-old child complains of slight mobility of the lower front teeth. Objectively: the teeth have a normal size and shape. On the orthopantomogram: the roots of the frontal teeth are shortened, thin; chewing teeth have one root; tooth cavities sharply narrowed; the germinal zone in the area of the second molars is insignificant. Put the previous one diagnosis.*

- A. Imperfect dentinogenesis.
- B. Amelogenesis imperfecta.
- C. Systemic hypoplasia
- D. Localized periodontitis
- E. Generalized periodontitis

6. *The parents of a 4-year-old child went to the dentist with complaints about discoloration and increased wear of her teeth. From the anamnesis, it became known that the enamel began to chip off the teeth almost immediately after eruption. Objectively: the crown parts of all teeth have been erased for almost 1/2 of the height, they have a yellow-gray color. What additional examination is required for clarification diagnosis?*

- A. Orthopantomography.
- B. Welcome dyeing.
- C. Stomatoscopy.
- D. Electroodontometry.
- E. General analysis of blood

7. *The parents of a 2.5-year-old girl turned to the dentist with complaints about chipping of the enamel and the dark color of the teeth that erupted already damaged. Objectively: all milk teeth have a light brown watery opalescent color; the shape of the teeth has not changed, except for 51 teeth, which has a chipped cutting edge within the enamel-dentine junction; there are no carious cavities . X-ray: the cavities of the upper front teeth are reduced in size, the root canals are narrow. What research is needed to establish a definitive diagnosis?*

- A. Examination of bones skeleton
- B. Examination in endocrinologist
- C. General analysis of blood

D. Electroodontometry.

E. Aiming X-ray teeth

8. *A 14-year-old boy complains of a cosmetic defect. Objectively: the size and shape of the permanent teeth have not changed; white enamel, without luster, hard when probing; on the vestibular surfaces of all teeth there are enamel defects in the form of a wide transverse furrow, the defects are at the same level, and are painless when probed. The presence of which disease can be suspected child?*

A. Amelogenesis imperfecta.

B. Fluorosis teeth

C. Vognisheva odontodysplasia.

D. Systemic hypoplasia enamel

E. Imperfect dentinogenesis.

9. *A 16-year-old teenager complains of a cosmetic defect and increased tooth sensitivity. Objectively: enamel is absent on all teeth, dentin is yellow-brown in color; an increased sensitivity of the dentine to a cold stimulus is revealed; open bite. What is the treatment plan for this the patient?*

A. Orthopedic and orthodontic treatment.

B. Orthodontic treatment.

C. straight restoration.

D. Remineralizing therapy.

E. Indirect restoration.

10. *A 13-year-old girl came to the dentist with complaints about the presence of stains on the incisors of the upper jaw. Objectively: teeth of normal shape and size; crowns 1/3 from the cutting edge have a matte white color ("snow cap"); probing the affected area reveals the hardness of the tissues. What type of imperfect amelogenesis corresponds to the described clinical picture?*

A. Hypomaturational.

B. Hypoplastic.

C. Hypocalcification.

D. Erosive and destructive.

E. Hypomaturational with taurodontism.

PRACTICAL LESSON #9

Subject of the lesson: Pulpitis of temporary teeth in children. Regularities of the clinical course in children of different ages. Clinic, diagnosis, differential diagnosis.

The aim: To study the features of pulpitis of temporary teeth in children of different ages.

Actuality: To learn to diagnose pulpitis in children of different ages and carry out differential diagnosis of various forms of pulpitis among themselves and with other dental diseases.

Control of the initial level of knowledge:

1. Peculiarities of the anatomical structure of temporal teeth

2. Topographic features of the structure of the temporal cavity teeth

3. Topography of root canals of temporary teeth.
4. What are the features of the structure of the soft tissues of the temporary teeth of the tooth?
5. Name the features of the structure of the apical opening of the temporal teeth

Lesson content:

Pulpitis is an inflammation of the tooth pulp that occurs as a result of the action on its tissue of microorganisms, their waste products and toxins, as well as decay products of the organic substance of dentin. Pulpitis occurs as a result of microbial invasion or traumatic damage to the pulp. The ways of penetration of microorganisms into the pulp are different: through the carious cavity, through the apical opening with the flow of blood and lymph. Inflammation can be the result of trauma, which can be: - mechanical (breaking off part of the crown of the tooth, opening the pulp horn during preparation of the carious cavity); - thermal (as a result of carious cavity preparation without water cooling); - chemical (in case of treating the carious cavity with irritant drugs, increasing the time of dentin etching, applying irritating materials without proper isolation).

Most often, pulpitis develops as a result of the carious process. In this case, reactive changes in the pulp are observed already during acute initial caries. With medium caries, changes similar to the initial forms of inflammation are determined in the pulp: dilation of blood vessels, foci of polymorphonuclear leukocyte infiltration. Against the background of deep caries, the above-mentioned morphological changes in the pulp are more pronounced, however, they are reversed.

The course of pulpitis in children is closely related to the peculiarities of the structure of temporary teeth. At different stages of tooth development, the disease has different manifestations. Knowledge of the age -related features of the structure of the teeth helps to understand the pathogenesis of pulpitis, as well as the features of their clinical manifestations, diagnosis and choice of treatment method . Features of the occurrence and course of pulpitis in temporary teeth depend on the state of general somatic health of the child, its age and the state of the immune system. It should be noted that the initial stages of pulpitis are practically not diagnosed in the clinic, as they have a very rapid course.

The first stage of acute inflammation of the pulp is hyperemia, characterized by the expansion of arterioles and capillaries in the pulp. This condition is reversible if the cause of inflammation is eliminated before it reaches an intensity capable of causing alteration of the pulp tissue. Prolonged exposure to the irritant leads to increased hyperemia and the formation of exudate. Hyperemia turns into a limited serous inflammation - also the reverse process due to the functioning of the lymphatic system, which ensures the outflow of exudate from the swollen tissue. If the action of the damaging factor continues, the walls of the vessels are affected, the output of leukocytes increases beyond their limits, micro-foci of purulent melting of the pulp are formed, which later coalesce - purulent inflammation of the pulp develops.

Chronic fibrous pulpitis develops as a result of acute serous inflammation. In temporary teeth, a primary-chronic process often develops, which begins not with

microcirculation disturbance, but with the accumulation of activated macrophages. Macrophages are activated by absorbed microorganisms and secrete inflammatory mediators.

At the stage of an unformed root of a temporary tooth, when the pulp is morphologically immature, chronic forms of pulpitis prevail, in particular, chronic fibrous pulpitis. During the period of complete formation of a temporary tooth, there are both acute and chronic forms of pulpitis, but even then we often observe the chronic course of the disease in the clinic. During the period of root resorption of temporary teeth, only chronic forms of pulpitis are diagnosed, the course of which is almost asymptomatic.

Among the acute forms of pulpitis of temporary teeth in children, acute diffuse pulpitis is most often observed in the clinic. The leading clinical sign of acute pulpitis is acute paroxysmal pain that occurs in the tooth without any stimulus. External chemical, thermal, mechanical stimuli always increase the pain attack or cause it. The nature of the exudate obtained during the opening of the pulp horn (serous or purulent) is also important for diagnosis. With purulent acute pulpitis, children complain of spontaneous long-term pain in the tooth, the nature of the pain is pulsating. As a rule, with this form of pulpitis, children cannot indicate the causative tooth, since the pain radiates along the branches of the trigeminal nerve. There is pain in the head, neck, ear canal. As a rule, acute forms of pulpitis in temporary teeth are accompanied by perifocal periodontitis, accordingly, percussion of a pulpite tooth can be painful.

It should be remembered that in the practice of a pediatrician, the information received from the child's parents about the time of the onset of pain for the first time, the intervals after which the pain recurs, and the reasons that caused or intensified it are important.

Among the chronic forms of pulpitis in children, fibrous, hypertrophic and gangrenous pulpitis are distinguished. Chronic forms of pulpitis of temporary teeth, as a rule, are not accompanied by pain. Chronic fibrous pulpitis in temporary teeth is asymptomatic, there may be no connection of the carious cavity with the tooth cavity. In this case, differential diagnosis of chronic fibrous pulpitis is carried out with chronic deep caries on the basis of instrumental (probing) and additional data (electroodontometry) research methods. Differential diagnosis of chronic fibrous pulpitis should also be carried out with chronic fibrous periodontitis, which can also occur in temporary teeth without connecting the carious cavity with the tooth cavity. In this case, the following additional research method is used - X-ray

With chronic gangrenous pulpitis, the child complains of unpleasant sensations in the tooth while eating, with chronic hypertrophic pulpitis - of bleeding while eating. The painful reaction of the pulp to the action of a cold stimulus and probing is evaluated. Features of pulpitis of temporary teeth: rapid course and intensive development of acute inflammation with rapid spread to subapical tissues, development of an inflammatory reaction of the body, course of pulpitis in the absence of connection of the carious cavity with the cavity of the tooth (acute inflammation of the pulp, chronic fibrous and gangrenous pulpitis). At the end of the lesson, the teacher sums up, monitors the level of mastery of the material, evaluates the students' practical work.

Control of the level of knowledge acquisition:

1. Etiology, pathogenesis, classification pulpitis
2. Features of the occurrence and course of acute pulpitis in children are different age
3. Acute diffuse pulpitis in children, complaints , clinical characteristics of the disease.
4. Differential diagnosis of acute pulpitis in children
5. Chronic pulpitis, classification.
6. Differential diagnosis of chronic fibrous pulpitis in temporary teeth.
7. Clinical signs of chronic hypertrophic pulpitis
8. The main signs of chronic gangrenous pulpitis
9. Peculiarities of the course of pulpitis in early children age

Oriented test tasks:

1. *A 6.5-year-old child complains of pain in the lower lateral tooth that occurred at night. Objectively: on the chewing surface of tooth 75 there is a carious cavity filled with softened, pigmented dentin. The tooth cavity is closed. Probing is sharply painful throughout the bottom of the carious cavity. A cold stimulus causes a prolonged attack of pain. Put the previous one diagnosis.*

- A. Acute diffuse pulpitis
- B. Pulpit, complicated periodontitis
- C. Acute focal pulpitis
- D. Acute serous periodontitis
- E. Chronic fibrotic pulpitis

2. *During the preventive examination of a 7-year-old boy, a deep carious cavity was found in the 85th tooth, which communicates with the cavity of the tooth. Objectively: the crown of the 85th tooth is gray . The carious cavity of the tooth is filled with a brown mass , surface probing of the cavity is painless, deep - painful. Percussion of the 85th tooth is slightly painful, the mucous membrane in the area of the projection of the roots of the 85th tooth has no pathological changes. Which is the most likely diagnosis?*

- A. Chronic gangrenous pulpitis
- B. Chronic granulating periodontitis
- C. Chronic fibrotic pulpitis
- D. Exacerbation of chronic periodontitis
- E. Chronic concrementous pulpitis

3. *The parents of a 5-year-old child turned to the dentist regarding the child's complaints of spontaneous pain in the tooth of the upper jaw on the right, which worsens at night and when eating cold food. During the examination, a deep carious cavity was found in tooth 65, which communicates with the cavity of the tooth. Probing is painful, percussion of the 65th tooth is painless. Cold water causes pain that slowly passes. Which is the most likely diagnosis?*

- A. Acute diffuse pulpitis

- B. Chronic fibrotic pulpitis
- C. Acute limited pulpitis
- D. Acute purulent pulpitis
- E. Pulpit, complicated periodontitis

4. *A 7-year-old child complains of spontaneous pain in the upper right corner teeth. On the chewing surface of tooth 55, the carious cavity is filled with softened light dentin, localized within the peripulpal dentin. Probing the bottom is sharply painful, percussion 55 is slightly painful. No radiological changes were detected in the area of tooth 55. Which is the most likely diagnosis?*

- A. Acute diffuse pulpitis
- B. Chronic fibrotic pulpitis
- C. Acute limited pulpitis
- D. Sharp deep caries.
- E. Chronic gangrenous pulpitis

5. *The parents of a 7-year-old child turned to the dentist with complaints of constant aching pain in the area of the child's 85th tooth. The pain increases when biting the tooth. During the examination, a filling was found in tooth 85. Vertical percussion of the 85th tooth is sharply painful. The tooth does not react to temperature stimuli. The mucous membrane of the gums in the area of the 85th tooth is hyperemic, swollen, painful on palpation. According to the records of the medical history, it became known that a month ago the child was treated by a dentist for chronic medium caries of 85 teeth. What caused this pathology?*

- A. Incorrectly placed diagnosis.
- B. Incorrect choice of shaft seal material
- C. Physiological change 85.
- D. Violation of the rules of preparation of solids fabrics
- E. Incorrect drug treatment of carious cavities

6. *A 9-year-old child complains of long-term pain in the lower left tooth after eating hot food. Objectively: Tooth 85 has a carious cavity, combined with cavity tooth Probing the bottom the cavity is painful and accompanied by bleeding. Percussion is painless. Put the previous one diagnosis.*

- A. Chronic fibrotic pulpitis..
- B. Chronic fibrous periodontitis.
- C. Chronic granulating periodontitis
- D. Chronic gangrenous pulpitis
- E. Chronic hypertrophic pulpitis

7. *The parents of a 5-year-old child complain of spontaneous pain in the left upper molar , which occurred the night before. On the medial contact surface of tooth 64, a carious cavity was found within the softened peripulpal dentin. Probing is sharply painful throughout the bottom of the cavity. Percussion of tooth 64 is slightly painful. Put the previous one diagnosis.*

- A. Acute diffuse pulpitis
- B. Chronic fibrous periodontitis.
- C. Acute serous periodontitis
- D. Chronic gangrenous pulpitis

- E. Chronic hypertrophic pulpitis
8. *During an objective examination , a carious cavity filled with softened pigmented dentine was found on the distal surface of tooth 84 in a 6.5-year-old child. Probing the bottom of the cavity is painful at one point. During necrotomy with an excavator , sharp pain and moderate bleeding occurred. Cold causes long - lasting pain. Percussion is painless. Make a preliminary diagnosis.*
- A. Chronic fibrotic pulpitis
- B. Sharp deep caries.
- C. Chronic deep caries.
- D. Acute diffuse pulpitis
- E. Chronic gangrenous pulpitis
9. *A 9-year-old child complains of pain in the left lower molar while eating. On the chewing surface of tooth 85, there is a carious cavity connected to the cavity of the tooth. Various pains and moderate bleeding occur when probing the union . Percussion of the 85th tooth is painless. Determine the preliminary diagnosis.*
- A. Chronic fibrotic pulpitis
- B. The pulpit is complicated periodontitis
- C. Chronic gangrenous pulpitis
- D. Chronic deep caries.
- E. Chronic granulating periodontitis
10. *A 6.5-year-old child complains about the presence of a carious cavity in the lower right molar. Objectively: a carious cavity was found on the chewing surface of tooth 74 within the softened mantle dentin. During the necrectomy, sharp pain and bleeding occurred. In the projection of the medial-buccal horn of the pulp, a connection with the cavity of the tooth was found. Percussion of tooth 74 is painless. Which of the diagnoses is possible?*
- A. Chronic fibrotic pulpitis
- B. Chronic gangrenous pulpitis
- C. Sharp deep caries.
- D. Chronic deep caries.
- E. Acute focal pulpitis

PRACTICAL LESSON #10

The subject of the lesson: The choice of the method of treatment of pulpitis in temporary teeth in children depending on the form of pulpitis and the stage of tooth development. Vital pulpotomy - performance technique, materials Peculiarities of local anesthesia in children .

The aim: To get acquainted with the methods of treatment of pulpitis of temporary teeth.

Actualiy: To learn how to choose a method of treatment of temporal pulpitis teeth depending on the form of the disease and the stage of tooth root development.

Control of the initial level of knowledge:

1. Classification of pulpitis in children
2. Features of the course of pulpitis of temporary teeth in children are different age
3. Features of the course of pulpitis of permanent teeth in children are different age
4. Used dental instruments _ at treatment of pulpitis in children
5. Classification of methods of treatment of pulpitis in children

Lesson content:

The main goal of treatment of pulpitis of both temporary and permanent teeth in children is the elimination of inflammation in the pulp and prevention of periodontal diseases. In children, it is necessary to provide conditions for the further development of the roots of unformed teeth and the physiological resorption of the roots of temporary teeth, the period of root formation and the finished growth of the roots of permanent teeth.

The choice of painkillers, antimicrobial, anti-inflammatory, stimulating substances and methods of their use is determined taking into account the age of the patient, the age of the pulpitis, the ways of infection of the pulp, the course of caries, the depth and localization of the carious cavity, the state of the periodontium, and the presence or absence of systemic, infectious diseases and the state of the body.

In children's dentistry, the following methods of pulpitis treatment are used:

- 1) conservative or biological – a method aimed at preserving vitality and functional activity pulp;
- 2) welcome pulpotomy – a method involving the removal under anesthesia of the crown part of the pulp and preservation of vital activity and functional activity of the root pulp;
- 3) welcome extirpation – a method of complete removal of the tooth pulp under anesthesia;
- 4) devital pulpotomy is a method that involves removing the crown part of the pulp after the previous one devitalization;
- 5) devital extirpation is a method of complete removal of the entire tooth pulp after the previous one devitalization

The choice of the method of treatment of temporary teeth depends primarily on the form of pulpitis, the stage of development of the tooth roots, the presence of changes in the periodontium, which is determined clinically or with the help of an X-ray.

The biological method of treating pulpitis of temporary teeth is rarely used, since the prerequisite for effective treatment with this method is the early stage of pulp inflammation and compliance with the rules of asepsis and antiseptics, which can be problematic in the case of treating a child. This method can usually be applied in case of accidental exposure of the pulp during the preparation of the carious cavity, which occurred within the limits of clinically healthy dentin. The temporary tooth

must be fully formed, which indicates the morphological and functional maturity of the pulp.

Vital pulpotomy - the method of removing the crown part of the pulp under local anesthesia. Indications for performing a welcome pulpotomy are:

1. A deep carious cavity in a temporary tooth, which, when completely prepared, is expected to be connected to the pulp chamber.
2. Absence of fistula, pathological mobility or spontaneous pain.
3. Absence of radiological changes in the furcation area of the roots and periapical tissues of the tooth, absence of internal and external resorption of the roots.
4. The possibility of restoration of a cariously affected tooth.

The technique of vital pulpotomy involves the removal of the coronal pulp while preserving its viable root part. The main stages are:

- 1) necrectomy of the affected dentin of the carious cavity;
- 2) opening the tooth cavity and removing the crown pulp;
- 3) hemostasis;
- 4) applying an insulating gasket;
- 5) tooth restoration .

An important prerequisite for the effectiveness of such treatment is the prevention of bacterial contamination of the pulp chamber, which is achieved by complete removal of necrotic dentin from the carious cavity before opening the tooth cavity. After removal of cariously altered tissues, the vault of the pulp chamber is removed and the crown pulp is removed to the level of the root canals with a sterile carbide bur at high speeds. During this manipulation, you should make sure that there are no overhanging edges of the roof of the pulp chamber. It is the overhanging edges of the vault of the pulp chamber and, accordingly, the undercut with the remnants of the crown pulp, which is often the cause of prolonged bleeding during pulpotomy. The complete opening of the cavity of the pulp chamber of the tooth not only improves visual control during the procedure, but also reduces the likelihood of prolonged uncontrolled bleeding. At the same time, the duration of bleeding from the root pulp stump after the amputation of the coronal part is an important prognostic factor that affects the choice of further medical tactics. Depending on the chosen technique, pulpotomy and at the same time hemostasis can be carried out in several ways: pharmacological, using medicinal agents (formocresol, glutaraldehyde, iron sulfate, sodium hypochlorite) and non-pharmacological methods (electrocoagulation, laser energy). Modern methods of vital pulpotomy using bioactive materials do not involve hemostasis using hemostatic agents. It is believed that in the absence of inflammation in the root pulp, the blood stops on its own within a few minutes. At the same time, the duration of bleeding for more than five minutes indicates the presence of inflammation in the root pulp and is an indication for its extirpation.

The classic technique of vital pulpotomy using a diluted solution of

formocresol for decades was and still remains the gold standard, with the success of which all subsequent methods of vital pulpotomy were compared. The technique involves the use of a diluted solution of formocresol (1:5 Buckley solution), which has bactericidal and devitalizing properties, destroys microorganisms and causes surface necrosis of the pulp [168]. The solution is made *ex tempore* (3 parts glycerin, 1 part distilled water, 1 part 19% formocresol). The ability of formocresol to bind proteins and inhibit their enzymatic activity leads to the so-called fixation of the pulp, which turns into an inert substance that does not undergo decay.

However, histological studies of pulp samples after vital pulpotomy using formocresol solution revealed that fixation of the pulp after a short-term effect of formocresol occurs only in its surface layer, which is in direct contact with the medium. The middle third of the root pulp often loses cellular integrity, resulting in impaired blood flow and areas of ischemia. In general, the pulp remains partially vital, partially (superficially) devital, and is in a state of chronic inflammation, areas of atrophy and fibrosis appear. Under such circumstances, it is prone to the formation of microabscesses and the appearance of internal and external root resorption. In the apical and middle third of the root, ingrowth of granulation tissue into the root pulp is often observed.

Many doctors are wary of the possibility of using formocresol in dental practice, because formaldehyde, which is part of formocresol, can have toxic, mutagenic and potentially carcinogenic properties and can cause nasopharyngeal carcinoma in humans and maxillary sinus cancer in experimental animals. The International Agency for Research on Carcinogens (IARC) listed formocresol as a potentially carcinogenic drug in June 2004. It is believed that formocresol, being absorbed and distributed throughout the human body, can cause a specific humoral response.

Glutaraldehyde has been proposed as a partial alternative to formocresol as an agent for stopping bleeding and superficial pulp mummification. This drug has a minimal effect on the tissue, mostly without deep penetration into the underlying layers. Morphological studies of the pulp after the use of glutaraldehyde revealed that under the influence of the drug there is a rapid superficial fixation of the pulp tissues with a very small level of inflammatory reaction in the deep areas of the pulp due to the limited penetration of glutaraldehyde. It is believed that the drug does not affect the tissue of the root pulp in the apex zone, which excludes the possibility of its negative systemic effect on the body. At the same time, the disadvantage of glutaraldehyde is the insufficient fixation of the pulp tissue, which leads, in most cases, to the formation of a weak barrier and can cause the subsequent occurrence of chronic inflammation of the pulp.

The next drug that was suggested to control the bleeding and that could have a superficial effect on the root pulp stump was ferrous sulfate. The drug does not contain

aldehydes and provides rapid hemostasis of damaged blood vessels due to agglutination of blood proteins. Agglutinated proteins form crusts in small capillaries, thus stopping bleeding without the traditional formation of a blood clot, which, according to many researchers, minimizes the possibility of chronic inflammation in the tooth pulp. The success of using sulfate iron ranges from 74% - 99%.

With the advent and introduction of lasers into modern dentistry, research began on their impact on the pulp tissue and the possibility of using laser energy in performing vital pulpotomy . It was found that under the action of laser radiation, surface coagulation of the pulp occurs with the formation of a zone of surface necrosis without negative effects on the underlying layers

In recent years, a number of studies have appeared on the possibility of using sodium hypochlorite as an alternative to formocresol when performing vital pulpotomy of temporary teeth. Research has revealed a high level of success in the use of this medicinal agent.

The next stage in the development of the vital pulp amputation technique was an attempt to stimulate reparative dentinogenesis at the pulp-material interface. It is known that the dental pulp is a connective tissue rich in innervation and vascularization, which is able to protect itself in response to an irritant or surgical opening by forming tertiary (reparative) dentin. The presence of vital pulp in the root canals minimizes the possibility of internal root resorption, and the presence of intact odontoblasts allows for the formation of a dentin bridge.

Calcium hydroxide was the first drug that was shown to be able to influence the possibility of dentin regeneration by stimulating reparative dentinogenesis. The process of formation of tertiary dentin under the influence of calcium hydroxide is possible due to the initiation of a mild inflammatory process in the pulp and takes place in four stages: exudation, proliferation, formation of osteo- and tubular dentin.

The most common complication that occurs when using calcium hydroxide is internal root resorption. Some researchers believe that the internal resorption of the roots occurs as a result of the so-called embolization of the pulp with calcium hydroxide particles, which during manipulation fall deep into the pulp tissue, forming inflammatory foci there.

The era of chemical agents such as calcium hydroxide has come to an end with the development and introduction of materials that open up new opportunities in the field of stimulating dentin formation. In 1993, a new cement based on natural calcium silicate - Mineral Trioxide Aggregate (MTA) - was introduced into clinical practice. Due to its unique properties, MTA made a real revolution in endodontics of both permanent and temporary teeth, and is one of the most researched materials in modern dentistry.

It is believed that the success of the treatment of open pulp lesions depends not so much on the properties of the material, but on the ability of the material to provide

reliable edge sealing of the defect, which makes microleakage impossible. An important property of MTA is its ability to harden in a moist environment, which creates the possibility of reliable isolation of the root pulp and prevents its infection. In addition, the material has high bioactivity and biocompatibility.

Numerical comparative studies of the use of MTA confirm the high clinical and radiological effectiveness of this material and the formation under its influence of dense dentine

The presence of metal inclusions and bismuth oxide (X-ray contrast) in the composition of MTA is the reason for the appearance of discolored teeth after pulp amputation, which is a certain drawback of the material. Calcium sulfate (gypsum) in the composition of the material somewhat reduces its mechanical strength .

In 2010, French scientists created a new restorative cement based on artificially synthesized calcium silicate - Biodentin, which has similar biological properties to MTA, but is devoid of a number of disadvantages of the latter. Thanks to the active biosilicate technology, the material does not contain metal impurities and calcium sulfate, zirconium dioxide serves as an X-ray contrast agent, which allows you to avoid the appearance of discolored teeth when using this material. Thanks to the special composition of the liquid, the hardening of the material takes place within 12 minutes, which makes it possible to complete the treatment in one visit. Studies on the ability of pulp precursor cells to activate, differentiate, and regenerate hard tooth tissues demonstrate that under the influence of Biodentin, dentin regeneration is stimulated by the differentiation of odontoblasts from pulp precursor cells. The material also activates the secretion of the protein TGF - β 1 (transforming growth factor β 1) by pulp cells, which controls the growth, proliferation, differentiation and adhesion of cells, thanks to which the reparative dentinogenesis is stimulated. It was found that the level of TGF - β 1 in the pulp when it is directly covered with Biodentin increases significantly, which leads to the formation of a dentin bridge almost immediately after applying cement.

Starting from the 1960s, a group of materials called bioceramics appeared on the dental market. Bioceramic materials used in various fields of dentistry can be of several types, in particular: bioinert ceramics - aluminum oxides, zirconium and carbon fibers used in orthopedic practice; biosoluble ceramics - based on calcium phosphate, which can take an active part in the body's metabolic processes and today has found practical use in surgical dentistry to replace bone defects; bioactive ceramics - bioglass and glass ceramics that have bioactive properties, that is, can interact with organic tissues of the body, such as pulp or periodontal tissues, and are actively used in endodontics. The composition of bioactive bioceramics resembles the composition of MTA (tricalcium silicate, calcium phosphate, calcium hydroxide, zirconium oxide), so many researchers consider MTA and Biodentin to be the first and second generation of bioceramics. The properties of bioceramics are practically the same as

those of MTA. The material is hydrophilic, insoluble, has a high pH level, needs moisture in the process of setting and hardening, is radiopaque, has bioactive properties .

Thus, the mechanisms of reparative dentinogenesis, which can be used in the practice of vital pulpotomy thanks to the introduction of new materials based on calcium silicate, have expanded the possibilities of using biologically based methods of treatment of temporary teeth by the method of vital pulpotomy.

Control of the level of knowledge acquisition:

1. Showings to welcome method treatment pulpitis temporary teeth in children
2. Methodology of conducting a welcome pulpotomy.
3. Preparations for conducting congratulatory pulpotomy of temporary teeth.
4. Indications for the devital method of treatment of pulpitis of temporary teeth in children
5. Indications for the use of the biological method of treatment of pulpitis of temporary teeth in children

Oriented test tasks:

1. *left upper tooth while eating . Objectively: a deep carious cavity connected to the cavity of the tooth was found on the chewing surface of tooth 65. Probing at the point of connection is painful, accompanied by bleeding. Percussion of the tooth is not painful. What method of treatment is appropriate use?*

- A. Devital amputation
- B. Devital extirpation.
- C. Welcome amputation.
- D. Welcome extirpation.
- E. Biological method.

2. *During the examination of a 5-year-old child, a diagnosis of acute general pulpitis of tooth 74 was established. Which method of treatment is the most rational in this case case?*

- A. Welcome extirpation
- B. Devital amputation.
- C. Devital amputation.
- D. Biological method.
- E. Removal tooth

3. *An 8.5-year-old boy complains of pain in the 46th tooth while eating. Objectively: tooth 46 has a carious cavity filled with softened dentin and not connected to the tooth cavity. Probing the bottom is painful, temperature stimuli cause long-lasting pain. Percussion is not painful. The child belongs to the III health group. Choose a material for long-term temporary root obturation channels*

- A. Paste containing calcium hydroxide.
- B. Timolova paste.

- C. Iodoform paste.
- D. Resorcin-formalin paste.
- E. Formocresol paste.

4. A 13-year-old child is bothered by pain in the 46th tooth from heat. Objectively: 46 tooth dirty gray color on chewing surface is carious cavity within the softened near pulpal dentin, connected to the cavity of the tooth. Deep probing is painful, reaction to thermal stimuli is long, painful. Percussion of tooth 46 is not painful. Choose the optimal method of treatment.

- A. Devital amputation.
- B. Welcome extirpation
- C. Extraction 46 tooth
- D. Welcome amputation.
- E. Biological method.

5. A 7-year-old child complained of intense pain in the left upper tooth all the previous night. Objectively: in tooth 65, a carious cavity was found within the softened near-pulpal dentine, which does not have a connection with the tooth cavity. Probing her bottom is sharply painful. Which material expedient use for obturation root channels after devital extirpation?

- A. Timolov pasta
- B. Zinc oxide-eugenol pasta
- C. Formocresol paste.
- D. Iodoform paste.
- E. Resorcin-formalin pasta

6. A 12.5-year-old child complains of spontaneous paroxysmal pain in the left upper tooth. On the chewing surface of the 26th tooth, there is a carious cavity within the peripulpal softened dentin. Probing the bottom is sharply painful, percussion of the tooth is painless. A long-lasting pain attack occurs from cold water. There is a history of allergy to lidocaine. KPV = 6. Choose the optimal method treatment.

- A. Welcome amputation
- B. Devital extirpation
- C. Welcome extirpation
- D. Devital amputation.
- E. Biological method.

7. upper right tooth while eating. On the chewing surface of tooth 75, there is a deep carious cavity filled with softened light brown dentine, which is connected to the tooth cavity. Probing at the point of connection is sharply painful, accompanied by moderate bleeding. Percussion of the tooth is painless. Radiologically, the initial resorption of the medial is revealed the root to 1/4 him length Which with methods treatment will be optimal in this case?

- A. Welcome amputation.
- B. Extraction 75 tooth
- C. Devital extirpation
- D. Welcome extirpation
- E. Devital amputation.

8. Eleven years old girl turned to the dentist . After subjective, objective and additional data methods examination, the doctor diagnosed hyperemia of the pulp of tooth 11. What method of treatment is most justified in this case?

- A. Welcome amputation.
- B. Biological method.
- C. Devital amputation.
- D. Devital extirpation
- E. Extraction 65 tooth

9. *A 15-year-old child complains of pain from thermal stimuli in the tooth on the left upper jaw . Objectively: the 26th tooth has not changed in color, the carious cavity within the peripulpal dentin, the tooth cavity is open, deep probing is painful. Choose the optimal method of treatment.*

- A. Devital extirpation
- B. Welcome extirpation
- C. Biological method
- D. Welcome amputation
- E. Devital extirpation

10. *In a 7-year-old child, during a preventive examination , a carious cavity filled with softened pigmented dentine was found on the contact surface of tooth 65. During necrotomy with an excavator there was a connection between the carious cavity and the cavity of the tooth. Probing in this place is accompanied by pain and bleeding. The reaction to temperature stimuli is painful and long- lasting. What paste should be used on the first visit?*

- A. Arsenic.
- B. A paste that contains hydroxide calcium
- C. Zinc oxide-eugenol.
- D. Paraformaldehyde.
- E. Timolov.

PRACTICAL LESSON #11

Lesson topic: Treatment of pulpitis of temporary teeth in children. Vital and devital pulp extirpation. Indications, execution method, effectiveness control.

The aim: To study the features of treatment of pulpitis of temporary teeth in children by the method of vital and devital extirpation of the pulp.

Actuality: To learn how to treat various forms of pulpitis of temporary teeth by methods of vital and devital pulp extirpation.

Control of the initial level of knowledge:

1. Etiology, pathogenesis of caries teeth
2. What are the complications? caries?
3. Terms of formation of permanent roots teeth
4. Comparative characteristics of the structure of the pulp of temporary and permanent teeth in children of different ages periods
5. Additional methods of examining the state of the pulp teeth

Lesson content.

The choice of the method of treatment of pulpitis of temporary teeth in children and its effectiveness depend not least on the general somatic condition of the body, transferred infectious diseases, the quality of nutrition, and the state of the ecological environment in which the child is.

Pulp extirpation is a method of complete removal of both the crown and root pulp of a temporary tooth.

Indications for the use of the pulp extirpation method in temporary teeth are almost all forms of pulpitis at the stage of the formed tooth root (especially in the presence of clinical or radiological signs of periodontal damage), as well as acute purulent, chronic gangrenous pulpitis and pulpitis complicated by periodontitis of temporary teeth that are at the stage of an unformed root. It should be noted that if the root of the temporary tooth is in the stage of resorption, then removal of the temporary tooth is indicated for such forms of pulpitis .

Extirpation of the pulp can be carried out by both the vital and the devital method. The vitalizing method involves local anesthesia before the pulp removal procedure, the devitalizing method involves the preliminary use of a devitalizing agent on the pulp before its removal (extirpation).

The procedure for extirpation of the pulp of a temporary tooth involves the use of a rubber dam, that is, isolation of the tooth before the intervention, which prevents infection of the tooth cavity and root canals during the procedure.

Conducting method:

- Isolation of the tooth with a rubber dam;
- Preparation of carious cavity with complete removal of cariously changed tissues;
- Removal of the arch of the pulp chamber of the tooth and the formation of the cavity of the tooth, which involves the removal of all overhanging edges of the pulp chamber;
- Removal of the crown pulp with a spherical bur at high revolutions to the holes of the root canals of the tooth;
- Root pulp removal using a pulp extractor;
- Determination of the length of root canals using the apex locator and/or radiological method;
- Formation and disinfection of the root canal using endodontic tools and antiseptic solutions.
- Sealing of root canals with pastes based on zinc oxide eugenol, thymol, calcium-containing pastes with the use of canal fillers.
- X-ray control of filling procedures.
- Installation of permanent / temporary filling / restoration or crown.

The materials used for sealing the root canals of temporary teeth must have certain properties, namely: have a pronounced antiseptic effect, be adhesive to the walls of the roots, be moderately soluble, that is, dissolve together with the roots of the temporary teeth. It should be noted that gutta-percha, a material widely used for

filling permanent teeth with formed roots, is not used for filling temporary teeth due to its indissoluble nature.

The method of vital extirpation of the pulp avoids the toxic effect of devitalizing agents on the periodontium of the tooth, which meets the biological requirements.

Devital methods of treatment of pulpitis are used in the case impossibility of local anesthesia. Devital extirpation is usually performed in teeth with formed roots. The difference from the vital extirpation technique is the use of a devitalizing agent before the pulp removal procedure. As a devitalizing agent, paraformaldehyde paste is used, which is applied for 7-10 days if the tooth is single-rooted and for 10-14 days if the tooth is multi-rooted. The entire subsequent procedure of pulp removal and root canal filling is carried out in the same way as when using the pulp extirpation technique.

In the process of practical work, students examine thematic patients, collect anamnesis of life and illness, make a diagnosis, carry out choice of treatment method.

At the end of the lesson, the teacher sums up, checks the medical documentation, announces grades.

Control of the level of knowledge acquisition:

1. Showings to welcome method treatment pulpitis temporary teeth in children
2. Showings to welcome method treatment pulpitis permanent teeth in children
3. Indications for the devital method of treatment of pulpitis of temporary teeth in children
4. Indications for the devital method of treatment of pulpitis of permanent teeth children
5. Indications for the use of the biological method of treatment of pulpitis of temporary teeth in children
6. Indications for the use of the biological method of treatment of pulpitis of permanent teeth children

Oriented test tasks:

1. *left upper tooth while eating . Objectively: a deep carious cavity connected to the cavity of the tooth was found on the chewing surface of tooth 65. Probing at the point of connection is painful, accompanied by bleeding. Percussion of the tooth is not painful. What method of treatment is appropriate use?*

- F. Devital amputation
- G. Devital extirpation.
- H. Welcome amputation.
- I. Welcome extirpation.
- J. Biological method.

2. *During the examination of a 5-year-old child, a diagnosis of acute general pulpitis of tooth 74 was established. Which method of treatment is the most rational in this case case?*

- F. Welcome extirpation
- G. Devital amputation.
- H. Devital amputation.
- I. Biological method.
- J. Removal tooth

3. *An 8.5-year-old boy complains of pain in the 46th tooth while eating. Objectively: tooth 46 has a carious cavity filled with softened dentin and not connected to the tooth cavity. Probing the bottom is painful, temperature stimuli cause long-lasting pain. Percussion is not painful. The child belongs to the III health group. Choose a material for long-term temporary root obturation channels*

- F. Paste containing calcium hydroxide.
- G. Timolova paste.
- H. Iodoform paste.
- I. Resorcin-formalin paste.
- J. Formocresol paste.

4. *A 13-year-old child is bothered by pain in the 46th tooth from heat. Objectively: 46 tooth dirty gray color on chewing surface is carious cavity in within the boundaries of the softened near-pulpal dentin, connected to the cavity of the tooth. Deep probing is painful, reaction to thermal stimuli is long, painful. Percussion of tooth 46 is not painful. Choose the optimal method of treatment.*

- F. Devital amputation.
- G. Welcome extirpation
- H. Extraction 46 tooth
- I. Welcome amputation.
- J. Biological method.

5. *A 7-year-old child complained of intense pain in the left upper tooth all the previous night. Objectively: in tooth 65, a carious cavity was found within the softened near-pulpal dentine, which does not have a connection with the tooth cavity. Probing her bottom is sharply painful. Which material expedient use for obturation root channels after devital extirpation?*

- F. Timolov pasta
- G. Zinc oxide-eugenol pasta
- H. Formocresol paste.
- I. Iodoform paste.
- J. Resorcin-formalin pasta

6. *A 12.5-year-old child complains of spontaneous paroxysmal pain in the left upper tooth. On the chewing surface of the 26th tooth, there is a carious cavity within the peripulpal softened dentin. Probing the bottom is sharply painful, percussion of the tooth is painless. A long-lasting pain attack occurs from cold water . There is a history of allergy to lidocaine. KPV = 6. Choose the optimal method treatment.*

- F. Welcome amputation

- G. Devital extirpation
- H. Welcome extirpation
- I. Devital amputation.
- J. Biological method.

7. *upper right tooth while eating . On the chewing surface of tooth 75, there is a deep carious cavity filled with softened light brown dentine , which is connected to the tooth cavity. Probing at the point of connection is sharply painful, accompanied by moderate bleeding. Percussion of the tooth is painless. Radiologically, the initial resorption of the medial is revealed the root to 1/4 him length Which with methods treatment will be optimal in this case?*

- F. Welcome amputation.
- G. Extraction 75 tooth
- H. Devital extirpation
- I. Welcome extirpation
- J. Devital amputation.

8. *old girl turned to the dentist . After subjective, objective and additional data methods examination, the doctor diagnosed hyperemia of the pulp of tooth 11. What method of treatment is most justified in this case?*

- F. Welcome amputation.
- G. Biological method.
- H. Devital amputation.
- I. Devital extirpation
- J. Extraction 65 tooth

9. *A 15-year-old child complains of pain from thermal stimuli in the tooth on the left upper jaw . Objectively: the 26th tooth has not changed in color, the carious cavity within the peripulpal dentin, the tooth cavity is open, deep probing is painful. Choose the optimal method of treatment.*

- F. Devital extirpation
- G. Welcome extirpation
- H. Biological method
- I. Welcome amputation
- J. Devital extirpation

10. *In a 7-year-old child, during a preventive examination , a carious cavity filled with softened pigmented dentine was found on the contact surface of tooth 65. During necrotomy with an excavator there was a connection between the carious cavity and the cavity of the tooth. Probing in this place is accompanied by pain and bleeding. The reaction to temperature stimuli is painful and long- lasting. What paste should be used on the first visit?*

- F. Arsenic.
- G. A paste that contains hydroxide calcium
- H. Zinc oxide-eugenol.
- I. Paraformaldehyde.
- J. Timolov.

PRACTICAL LESSON No. 12

Lesson topic: Pulpitis of permanent teeth in children. Patterns of clinical manifestations in children of different ages, diagnosis, differential diagnosis Conservative method (Vital pulp therapy). Indications, execution method, efficiency control, prognosis.

The aim: To study the patterns of clinical manifestations of various forms of pulpitis of permanent teeth in children.

Actuality: To learn to diagnose and carry out differential diagnosis of various forms of pulpitis among themselves.

Control of the initial level of knowledge:

6. Etiology, pathogenesis of caries teeth
7. What are the complications? caries?
8. Terms of formation of permanent roots teeth
9. Comparative characteristics of the structure of the pulp of temporary and permanent teeth in children of different ages periods
10. Additional methods of researching the state of the dental pulp .

Lesson content:

Features of the occurrence and course of pulpitis in children depend on a number of factors, namely: the degree of tooth formation, etiological factor, the state of the child's general somatic health.

The course of pulpitis in permanent unformed teeth in children has a lot in common with the course of pulpitis in temporary teeth. In permanent teeth with unformed roots the occurrence of an inflammatory process in the pulp is often observed with a closed tooth cavity and a small carious cavity. In permanent unformed teeth , serous inflammation of the pulp quickly turns into purulent.

The acute stage of inflammation quickly turns into a chronic process, and chronic inflammation of the pulp can develop even without the onset of an acute process. This is explained by the peculiarities of the anatomical and topographical structure of teeth with unformed roots. Thus, with acute diffuse pulpitis of permanent unformed teeth, pain is determined during vertical percussion. This symptom is leading to the diagnosis of diffuse inflammation of the pulp and is explained by the peculiarities of the structure of an unformed tooth.

Often in children , pulpitis is accompanied by the phenomena of general intoxication of the body. This is due to the peculiarities of the immunological reactivity of the child's body. Pulpitis in children can develop as a complicated form of caries or as a result of an injury. During the treatment of caries, one should remember the peculiarities of the structure of permanent unformed teeth, which cause peculiarities in the work. Thus, during the formation of the bottom of the carious cavity, it is possible to easily open the pulp horns, which in the future can lead to traumatic pulpitis.

Diagnosing pulpitis and differential diagnosis of various forms of pulpitis is

possible only if you know the features of the clinical course of various forms of pulpitis. There are acute and chronic forms of pulpitis. Acute forms include hyperemia of the pulp, acute focal pulpitis, acute diffuse pulpitis, which can be serous and purulent.

Examination of a dental patient begins with the collection of complaints. In acute forms of pulpitis, children complain of spontaneous pain, while they often cannot point to the causative tooth, which complicates the diagnosis. Pain may occur and worsen during eating. Partial acute pulpitis with a distinct clinical picture occurs in permanent teeth with formed roots. This form of pulpitis is manifested by sharp pain that occurs without the influence of an external stimulus. The pain attack does not last long. The pain reappears after a considerable period of time. The child accurately indicates the diseased tooth. Acute general pulpitis is a consequence of acute partial pulpitis. Its clinical picture depends on the age-related characteristics of the pulp structure and the condition of the root. In teeth with formed roots, the symptomatology is clearly expressed and characterized by a sharp, long-lasting acute pain of an attack-like nature, which occurs without the influence of an external stimulus. The pain is usually especially acute at night. Light intervals are getting shorter and shorter. With acute purulent pulpitis, children complain of nocturnal, spontaneous, long-lasting pain in the area of the causative tooth. The pain has a pulsating character, radiation of pain appears along the course of the trigeminal nerve. Pain can be reduced under the influence of cold. The child is not able to indicate the diseased tooth, and sometimes the side of the jaw on which it is located. Acute limited pulpitis, hyperemia of the pulp, acute diffuse pulpitis and exacerbation of chronic fibrous pulpitis should be differentiated. With focal pulpitis, pain is observed when probing the carious cavity in the places where the horns of the pulp project. It should also be done differential diagnosis of acute forms of pulpitis with deep caries. With deep caries, probing is painful throughout the bottom of the caries cavities

Chronic forms of pulpitis include chronic fibrous pulpitis, chronic gangrenous pulpitis, and chronic hypertrophic pulpitis.

Chronic fibrous pulpitis is the most common form of pulpitis of permanent teeth and can develop as a primary chronic process without a previous stage of acute inflammation. In chronic fibrous pulpitis, a small carious cavity is clinically observed, which is filled with food residues and pigmented dentin, probing the cavity is painful in the places where the pulp horns project to the bottom of the carious cavity. Often in permanent, unformed teeth in children with chronic fibrous pulpitis, there is no connection between the carious cavity and the tooth cavity. It is expedient to conduct a differential diagnosis of chronic forms of pulpitis between itself and chronic periodontitis. At the same time, the patient's complaints are taken into account, both instrumental and additional research methods, such as X-ray and EOD, are used. Chronic hypertrophic pulpitis is one of the forms of productive inflammation of the pulp, which is accompanied by its growth. Patients complain of bleeding while eating, unpleasant sensations in the tooth. This form of inflammation should be differentiated from such periodontal diseases as papillitis. Chronic gangrenous pulpitis is accompanied by tooth discoloration. Complaints mainly boil down to a feeling of heaviness in the tooth, the pain in the tooth has a throbbing

character. Differential diagnosis of this form of pulpitis should be carried out with chronic deep caries and chronic periodontitis

Vital therapy of the pulp - methods of treatment of initial forms of pulp lesions, in particular pulp hyperemia or focal pulpitis. These methods include the method of indirect pulp coating or congratulatory pulpotomy. The method of indirect pulp coating was proposed more than 200 years ago as a method of conservative pulp therapy. The definition of this method is as follows: "Procedures aimed at protecting or maintaining the vitality of the pulp of a carious tooth, in which the opening of the pulp chamber may occur with complete excavation of the altered dentin."

Methods of convalescent pulp therapy include:

- The method of indirect pulp coating;
- Method of direct pulp coating;
- Method of welcome pulpotomy.

Treatment of the pulp by the method of indirect coating is carried out by partially removing the affected dentin from the bottom of the carious cavity and installing a medical biological (calcium-containing) pad on its bottom . Filling of the carious cavity is done with a filling material, which may need to be replaced in the future. In this case, the treatment is carried out in two stages, and after a few months, the bottom of the carious cavity is inspected and the filling is replaced. Calcium hydroxide is a biological sealant under the influence of which mineralization and deposition of reparative dentin occurs . After 6-8 weeks, repeated preparation of the carious cavity is carried out, which involves complete removal of cariously changed dentin and permanent filling of the tooth.

cariously altered dentin (one-stage or two-stage) is considered a more rational and predictable approach to preserving the vitality of pulp tissues in the long term, compared to the method of radical preparation of the carious cavity, which in most cases involves the opening of the horn pulp _ This approach is especially recommended for the treatment of immature permanent teeth.

The method of direct covering of the pulp is used under the condition that there is a connection with the cavity of the tooth during the preparation of the carious cavity, but there is no pronounced bleeding from the pulp. A medical biological pad is placed directly on the tooth pulp. Calcium silicate cements (MTA, Biodentin) are used as a material for direct pulp coating, which have biologically active properties and good marginal adaptation of the material, which prevents microleakage and subsequent infection of the pulp.

The method of vital pulpotomy, which also belongs to the methods of vital pulp therapy, is carefully described in the previous topic of this manual.

Control of the level of knowledge acquisition:

1. Sharp shapes pulpitis

2. Clinical signs of acute focal pulpitis
3. Clinical signs of serous diffuse pulpitis
4. Clinical signs of acute purulent pulpitis
5. Differential diagnosis of acute forms of pulpitis among themselves.
6. Chronic forms pulpitis
7. The main clinical signs of chronic fibrotic pulpitis
8. Name the clinical signs of chronic hypertrophy pulpitis
9. Signs of chronic pulpitis.
10. Additional methods of examining the condition of hard and soft tissues tooth

Oriented test tasks:

1. *A 9.5-year-old child complains of long-term pain in the right lower tooth while eating. On the chewing surface of tooth 46, there is a carious cavity filled with softened light dentin, connected to the cavity of the tooth. Probing in this place is sharply painful, accompanied by moderate bleeding. Percussion of tooth 46 is painless. Put the previous one diagnosis.*

- A. Acute serous pulpitis
- B. Chronic gangrenous pulpitis
- C. Chronic hypertrophic pulpitis
- D. Acute purulent pulpitis
- E. Chronic fibrotic pulpitis

2. *A 15-year-old female patient complains of constant acute spontaneous tooth pain on the right upper jaw. The pain lasts for three days, has a pulsating character, and radiates to the cheekbone. Objectively: in the 15th tooth, there is a deep carious cavity within the peripulpal dentin, the bottom is soft. Probing the 15th tooth is sharply painful all over the bottom. Percussion of the 15th tooth is positive, a cold stimulus reduces the intensity of pain. How probable diagnosis?*

- A. Acute purulent pulpitis
- B. Acute limited pulpitis
- C. Acute diffuse pulpitis
- D. Exacerbation of chronic periodontitis
- E. Pulpit, complicated periodontitis

3. *A 14.5-year-old child complains of intense spontaneous, attack-like pain in the lower left tooth, which appeared at night. When examining the medial contact surface of tooth 36, a carious cavity filled with softened light dentin was revealed. There is no connection with the cavity of the tooth. Probing the bottom of the cavity is painful at one point. A long attack of pain occurs from cold water. Percussion of the tooth is not painful. What previous diagnosis?*

- A. Acute focal pulpitis
- B. Acute diffuse pulpitis
- C. Acute purulent pulpitis
- D. Exacerbation of chronic pulpitis
- E. Acute serous periodontitis

4. In a practically healthy child of 8.5 years, a carious cavity with a narrow entrance hole was found on the chewing surface of tooth 36 within the softened light peripulpal dentin. Probing the bottom of the carious cavity is slightly painful, cold water causes short-term pain. During the treatment, the horn of the pulp was accidentally exposed. What diagnosis should be made put?

- A. Acute traumatic pulpitis
- B. Sharp deep caries.
- C. Chronic deep caries.
- D. Exacerbation of chronic pulpitis
- E. Exacerbation of chronic periodontitis

5. lateral left upper tooth while eating. Objectively: there is a carious cavity filled with red tissue on the chewing surface of tooth 26. Its surface probing is mildly painful, and deep probing causes sharp pain and bleeding. Percussion of the 26th tooth is painless. Put the previous one diagnosis.

- A. Chronic hypertrophic pulpitis
- B. Chronic fibrotic pulpitis
- C. Chronic gangrenous pulpitis
- D. Chronic granulating periodontitis
- E. Chronic fibrous periodontitis.

6. A 14-year-old boy complains of acute spontaneous pain in a tooth on the right upper jaw. The pain lasts 3 days, intensifies at night, has a pulsating character, radiates to the temple. Objectively: in the 15th tooth, there is a carious cavity within the peripulpal dentin. Dentin is softened, dirty gray in color. Probing is painful throughout the bottom of the cavity, percussion of the 15th tooth is painful. What is the most likely diagnosis?

- A. Acute diffuse pulpitis
- B. Acute purulent pulpitis
- C. Acute focal pulpitis
- D. Exacerbation of chronic periodontitis
- E. Pulpit, complicated periodontitis

7. A 16-year-old patient complains of a feeling of heaviness in her tooth and pain from heat, bad breath. Objectively: the crown of tooth 46 is gray, a deep carious cavity is connected to the cavity of the tooth. Deep probing causes pain. Percussion of the 26th tooth is painless. Put the previous one diagnosis.

- A. Chronic gangrenous pulpitis
- B. Chronic hypertrophic pulpitis
- C. Chronic fibrotic pulpitis
- D. Chronic granulating periodontitis
- E. Chronic fibrous periodontitis.

8. A 13-year-old child complains of pain and bleeding from a tooth while eating. Objectively: on distal contact surface 16 tooth is a carious cavity filled with red tissue, the probing of which is painful and accompanied by bleeding. Percussion of the 16th tooth is painless. There are no radiological changes in the periodontium of tooth 16. Choose the optimal one diagnosis.

- A. Chronic hypertrophic pulpitis

- B. Chronic fibrotic pulpitis
- C. Chronic gangrenous pulpitis
- D. Chronic granulating periodontitis
- E. Another one reply.

9. *A 12-year-old patient complains of an attack-like toothache on the upper jaw on the left, which worsens at night and from irritants. Irradiation of pain in the left temple and eye. Similar attacks occurred three months ago, no treatment was carried out. Objectively: the 23rd tooth has a deep carious cavity that connects with the tooth cavity. Probing at the point of connection is sharply painful, vertical percussion is slightly painful, horizontal - painless. The mucous membrane in the projection of the apex of the root of tooth 25 is unchanged, palpation is painless. Thermodiagnosis is sharply painful. The pain attack is long-lasting. EOD - 60 microamps. X-ray - a slight expansion of the periodontal gap near the apex of the root of the 25th tooth. Which is the most likely diagnosis?*

- A. Pulpit, complicated periodontitis
- B. Chronic fibrotic pulpitis
- C. Acute diffuse pulpitis
- D. Acute purulent pulpitis
- E. Acute limited pulpitis

10. *A 13-year-old child complains of acute, spontaneous, short-term pain of an attack-like nature in the area of the lower jaw on the right. The pain started a day ago and worsens when eating. Objectively: there is a deep carious cavity on the chewing surface of tooth 36. The cavity of the tooth is closed, probing the bottom is painful in one point. A cold stimulus causes short-term pain. Your diagnosis.*

- A. Acute limited pulpitis
- B. Chronic fibrotic pulpitis
- C. Acute diffuse pulpitis
- D. Acute purulent pulpitis
- E. Sharp deep caries.

11. *The patient complains of prolonged pain attacks in the teeth of the lower jaw*

PRACTICAL LESSON #13

Lesson topic : Treatment of pulpitis of permanent teeth in children. Vital pulpotomy. Indications, method of execution, selection of medicines and materials.

The aim: To acquaint students with methods of treatment of pulpitis in permanent teeth in children.

Actuality: To teach students to choose a method of treatment of pulpitis of permanent teeth depending on the form of the disease and the development of the tooth root.

Control of the initial level of knowledge:

1. Classification of pulpitis in children
2. Features of the course of pulpitis of temporary teeth in children are different age
3. Features of the course of pulpitis of permanent teeth in children are different age
4. Dental instruments used in the treatment of pulpitis children
5. Classification of methods of treatment of pulpitis in children

Lesson content:

The main goal of treatment of pulpitis of both temporary and permanent teeth in children is the elimination of inflammation in the pulp and prevention of periodontal diseases. In children, it is necessary to provide conditions for the further development of the roots of unformed teeth and the physiological resorption of the roots of temporary teeth, the period of root formation and the finished growth of the roots of permanent teeth.

Methods of vital pulp therapy, in particular, the biological method of treating pulpitis, the method of indirect and direct pulp coating and vital pulpotomy, are the main methods of pulpitis treatment permanent teeth with unformed roots. The purpose of vital pulp therapy is to preserve the vitality of the pulp in a tooth with unformed roots to ensure its growth and completion of formation. When choosing a method of treatment for teeth with damaged pulp and unformed roots, two options for therapeutic tachytics are possible depending on the state of vitality of the pulp: apexogenesis and apexification.

Apexogenesis is the process of root formation as well as the method of vital pulp therapy, which is performed to continue the physiological development of the root and the formation of the apex of the tooth root.

The purpose of apexogenesis:

1. Maintaining the viability of Hertwig's sheath, which involves continued root development in length for a more desirable crown-to-root ratio.
2. Maintaining the vitality of the pulp, which allows odontoblasts to deposit secondary dentin, which in turn provides thickening of the root walls and reduces the risk of root fracture.
3. Preservation of conditions for closing the apex of the root and formation of a natural apical narrowing, which allows further sealing of the root canal.
4. Creation of a dentine bridge after pulpotomy.

Direct pulp coating, as one of the methods of vital pulp therapy, is used only in teeth with mechanically exposed pulp, and in the event that the exposed area is not too large. Direct pulp capping can also be performed after injury with pulp exposure in teeth with incomplete root formation, when the loss of the crown part of the tooth is minimal and the time after the injury is minimal (1-2 hours). The ideal conditions for direct pulp coating are traumatic injuries of teeth in young patients during the preparation of carious cavities.

The following conditions are necessary for the successful implementation of

the direct pulp coating technique:

- 1- the pulp is alive with a healthy blood supply
- 2- there are no signs of pulpitis or infection
- 3- a section of open pulp no more than 1.5 mm in diameter
- 4- radiographic evidence that there are no signs of inflammation in the periapical tissues.

If the exposure of the pulp is preceded by a carious process, then the opinions of researchers on this problem do not always coincide. Thus, some authors in their research on the response of the pulp tissue to caries demonstrate that the inflammatory reaction of the pulp as a response to dental caries begins long before microorganisms penetrate directly into the pulp cavity. They also demonstrated that the pulp response to caries can be both a specific and a nonspecific inflammatory response that is a response to bacterial and antigenic substances that penetrate through intact dentin.

Vital pulpotomy is recommended when the coronal pulp is compromised but the root pulp is viable. Clinically, the condition of the coronal pulp can be assessed by the following signs:

1. Normal X-ray picture
2. There is no percussion
3. Slight or absent response to thermal stimulation
4. Absence of unpleasant smell
5. During amputation of the pulp, bleeding is quickly and easily stopped.

All carious dentin is removed under anesthesia and sterile conditions are provided until the vault of the pulp cavity is completely removed (rubber dam application). Pulpotomy is performed with a sharp sterile bur or a sharp excavator, so as not to push dentin flakes into the pulp stump. Bleeding is controlled by inserting a sterile cotton ball soaked in saline. Next, calcium hydroxide or other bioactive material is introduced and the crown part of the tooth is tightly covered.

It should be emphasized the need for X-ray monitoring of the dynamics of root formation and the vital state of the dental pulp of patients who underwent vital pulpotomy.

Materials for direct pulp production.

Reparative dentinogenesis.

Calcium hydroxide was first proposed in 1930 by Nermann and has been widely used since then.

The reaction of the pulp to its direct coating with calcium hydroxide can be divided into four stages: the exudation stage (1-5 days), the proliferation stage (3-7 days), the stage of osteodentin formation (5-14 days) and the stage of tubular dentin formation (14 days and more). The stage of fibrin exudation under the covering material lasts about 4 days. After that, granulation tissue migrates from the deeper layers of the pulp, which is located along the wound surface, contains fibroblasts and capillaries, which proliferate and grow into the damaged tissue. The synthesis of new collagen fibers along the necrosis zone is observed from the fourth day after calcium application. After 7 days, cells surrounded by a new matrix with calcified inclusions can be observed. The process of precipitation of minerals occurs according to the same principle as the process of mineralization in bone, that is, minerals come from the bloodstream. After 14 days, a layer of odontoblasts can be observed, which are located

along the wound and the process of secondary dentin deposition begins. However, microscopic examination reveals that 89% of the surface of the dentin bridge contains tunnel defects.

The mechanism by which calcium hydroxide initiates the reparative process is unknown. It is believed that an increase in pH, which occurs due to the release of hydroxyl ions, can initiate the process of mineralization. Calcium hydroxide can also act as a local buffer against the acidic environment that is created in inflammatory foci, and can also neutralize lactic acid that is secreted by osteoclasts. This apparently prevents the destruction of mineralized tissue. High pH can also activate alkaline phosphatase, which plays an important role in the formation of hard tissues. However, the tooth pulp is also prone to dystrophic mineralization, which can continue until the complete obliteration of the root canal system. The process of mineralization that has begun can continue uncontrollably if enzymes (pyrophosphatase) that self-regulate this process do not come into play. The permeability of the capillaries gradually decreases, which leads to a decrease in blood supply to the pulp, which in turn leads to an even greater decrease in the level of pyrophosphatase and the continuation of uncontrolled mineralization of the pulp. This probably explains the presence of completely obliterated canals after pulpotomy and direct covering of the pulp.

There are different options for the formation of a dentin bridge depending on the pH level of the material used for this. In the case of using a material with a high pH level (Pulpdent), a necrotic zone is formed under the material. In this case, a dentine bridge is formed between this necrotic layer and the living pulpium that is below it. The necrotic tissue, in turn, gradually degenerates and disappears, which leads to the formation of a space between the covering material and the dentine bridge. When using a material with a low pH level (Dycal), a necrotic zone is formed in a similar way, but has time to resorb before the beginning of the formation of a dentin bridge, which is thus formed directly under the covering material. Histologically, the dentin bridges formed by both groups of materials are similar, but radiologically it is easier to notice a bridge that is formed using a material with a high pH level, because the gap between the bridge and the material is visible.

Calcium hydroxide has long been the gold standard for treating teeth with impacted but viable or partially viable pulp. However, most calcium-containing cements tend to dissolve, and in the case of micro leakage around the restoration, there is a possibility of access of bacteria to the newly formed dentin bridge. Since the structure of the bridge is porous, the penetration of microorganisms into the tooth pulp is possible.

Recently, such materials as hydroxyapatite, tricalcium phosphate, mineral trioxide aggregate (MTA), osteogenic protein have been compared and discussed. Studies using hydroxyapatite demonstrate the formation of irregular dentin and incomplete formation of the dentinal barrier, tricalcium phosphate is more active in combination with calcium hydroxide. An important property of the MTA material is its ability to harden in a humid environment. In the process of cement hardening, calcium hydroxide is released, which causes a high pH level of the environment. Histological studies demonstrate a high sealing property of the material and the ability to stimulate the formation of hard tissue (19), (Fig. 3). Currently, MTA is a promising candidate that can be an adequate substitute for calcium hydroxide.

At the end of the lesson, the teacher sums up, checks the medical documentation, announces grades.

Control of the level of knowledge acquisition:

1. Showings to welcome method treatment pulpitis permanent teeth in children
2. Vital pulp therapy in the treatment of pulpitis of permanent teeth.
3. The method of indirect and direct pulp coating. Indications for use.
4. Vital pulpotomy. Demonstrations and methods of conducting.
5. Indications for the devital method of treatment of pulpitis of permanent teeth children
6. Indications for the use of the biological method of treatment of pulpitis of permanent teeth children

Oriented test tasks:

1. *left upper tooth while eating . Objectively: a deep carious cavity connected to the cavity of the tooth was found on the chewing surface of tooth 65. Probing at the point of connection is painful, accompanied by bleeding. Percussion of the tooth is not painful. What method of treatment is appropriate use?*

- A. _ Devital amputation
- B. _ Devital extirpation.
- C. _ Welcome amputation.
- D. _ Welcome extirpation.
- E. _ Biological method.

2. *During the examination of a 5-year-old child, a diagnosis of acute general pulpitis of tooth 74 was established. Which method of treatment is the most rational in this case case?*

- A. Vital extirpation
- B. Devitalna amputation.
- C. Devitalna amputation.
- D. Biological method.
- E. Removal tooth

3. *An 8.5-year-old boy complains of pain in the 46th tooth while eating. Objectively: tooth 46 has a carious cavity filled with softened dentin and not connected to the tooth cavity. Probing the bottom is painful, temperature stimuli cause long-lasting pain. Percussion is not painful. The child belongs to the III health group. Choose a material for long-term temporary root obturation channels*

- A. Calcium hydroxide-containing paste.
- B. Timolova paste.
- C. Iodoform paste.
- D. Resorcin-formalin paste.
- E. Formocresol paste.

4. *A 13-year-old child is bothered by pain in the 46th tooth from heat. Objectively: 46 tooth dirty gray color on chewing surface is carious cavity in*

within the boundaries of the softened near-pulpal dentin, connected to the cavity of the tooth. Deep probing is painful, reaction to thermal stimuli is long, painful. Percussion of tooth 46 is not painful. Choose the optimal method of treatment.

- A. Devitalna amputation.
- B. Welcome extirpation
- C. Extraction 46 tooth
- D. Vital amputation.
- E. _ Biological method.

5. *A 7-year-old child complained of intense pain in the left upper tooth all the previous night. Objectively: in tooth 65, a carious cavity was found within the softened near-pulpal dentine, which does not have a connection with the tooth cavity. Probing her bottom is sharply painful. Which material expedient use for obturation root channels after devital extirpation?*

- A. Tymolov pasta
- B. Zinc oxide-eugenol pasta
- C. Formocresol paste.
- D. Iodoform paste.
- E. Resorcin-formalin pasta

6. *A 12.5-year-old child complains of spontaneous paroxysmal pain in the left upper tooth. On the chewing surface of the 26th tooth, there is a carious cavity within the peripulpal softened dentin. Probing the bottom is sharply painful, percussion of the tooth is painless. A long-lasting pain attack occurs from cold water . There is a history of allergy to lidocaine. KPV = 6. Choose the optimal method treatment.*

- A. Vitalna amputation
- B. Devitalna extirpation
- C. Welcome extirpation
- D. Devitalna amputation.
- E. Biological method.

7. *upper right tooth while eating . On the chewing surface of tooth 75, there is a deep carious cavity filled with softened light brown dentine , which is connected to the tooth cavity. Probing at the point of connection is sharply painful, accompanied by moderate bleeding. Percussion of the tooth is painless. Radiologically, the initial resorption of the medial is revealed the root to 1/4 him length Which with methods treatment will be optimal in this case?*

- A. Vital amputation.
- B. Extraction 75 tooth
- C. Devitalna extirpation
- D. Welcome extirpation
- E. Devitalna amputation.

8. *old girl turned to the dentist . After subjective, objective and additional data methods examination, the doctor diagnosed hyperemia of the pulp of tooth 11. What method of treatment is most justified in this case?*

- A. Vital amputation.
- B. Biological method.

C. Devitalna amputation.

D. Devitalna extirpation

E. Extraction 65 tooth

9. *A 15-year-old child complains of pain from thermal stimuli in the tooth on the left upper jaw . Objectively: the 26th tooth has not changed in color, the carious cavity within the peripulpal dentin, the tooth cavity is open, deep probing is painful. Choose the optimal method of treatment.*

A. Devitalna extirpation

B. Vital extirpation

C. Biological method

D. Welcome amputation

E. Devitalna extirpation

10. *In a 7-year-old child, during a preventive examination , a carious cavity filled with softened pigmented dentine was found on the contact surface of tooth 65. During necrotomy with an excavator there was a connection between the carious cavity and the cavity of the tooth. Probing in this place is accompanied by pain and bleeding. The reaction to temperature stimuli is painful and long- lasting. What paste should be used on the first visit?*

A. _ Arsenic.

B. _ A paste that contains hydroxide calcium

C. Zinc oxide-eugenol.

D. Paraformaldehyde.

E. Tymolov.

PRACTICAL LESSON #14

Lesson topic: Treatment of pulpitis of permanent teeth in children. Vital and devital pulp extirpation. Indications, method of execution, choice of filling materials for root fillings.

The aim: To get acquainted with the methods of treatment of pulpitis of permanent teeth in children and to study devital methods of treatment.

Actuality: To learn the methods of vital and devital extirpation of the pulp in the treatment of pulpitis of permanent teeth in children, depending on the form of the pulpitis and the state of the tooth root.

Control of the initial level of knowledge:

1. Anatomical and physiological features of the structure of the pulp of temporary teeth in children are different age

2. Pulp functions .

3. Classification of temporary pulpitis teeth

4. Peculiarities of the course of pulpitis of temporary teeth in children

5. Features of diagnosis and differential diagnosis of various forms of temporary pulpitis teeth

6. Peculiarities of the course of pulpitis at the stage of the unformed root of temporary teeth children

Lesson content:

Extirpative methods of treatment of pulpitis are used only in permanent teeth with formed roots. Extirpation of the pulp can be carried out in a vital and devital way.

The method of vital extirpation of the pulp in permanent teeth is performed under local anesthesia and avoids the toxic effect of devitalizing agents on periodontal tissue that meets biological requirements. Indications for using the method of vital pulp extirpation in permanent teeth are all forms of acute and chronic pulpitis of permanent teeth with a formed root, if conservative treatment methods are ineffective. In teeth with an unformed root, it is advisable to use vital extirpation in acute purulent and chronic gangrenous pulpitis, as well as in pulpitis accompanied by a pronounced reaction from the periodontium.

Devital methods of treatment of pulpitis of permanent teeth are used when it is impossible to carry out local anesthesia and painlessly remove the pulp.

Extirpation is a method of complete removal of crown and root pulp _ This method is used in a formed root for all forms of acute and chronic pulpitis and in teeth with an unformed root, for acute purulent, chronic gangrenous pulpitis and for periodontal disease.

Conducting method:

1. Installing a rubber dam to isolate the tooth from the oral cavity and prevent infection of the tooth cavity and root canals
2. Preparation of carious cavity and complete removal of cariously changed tissues .
3. Removal of the arch of the pulp chamber of the tooth and formation of the cavity of the tooth with the removal of all overhanging edges of the arch of the pulp chamber. This procedure allows you to form the correct access to the holes of the root canals.
4. Removal of the crown pulp with a sharp bur to the holes of the root canals.
5. Removal of pulp from root canals using a pulp extractor.
6. Determination of the working length of the root canal using an electronic or X-ray method. The use of the apex locator greatly facilitates the determination of the working length of the root canal and allows you to avoid errors that occur when using only the radiological method of determining the working length.
7. Mechanical and medical treatment of the root canal using endodontic instruments and antiseptic agents.
8. Filling of the root canal with materials for permanent filling.
9. X-ray control of the treatment.

Materials for permanent sealing of root canals are divided into so-called sealers and fillers. Sealers are pastes that fill the dentinal tubules and side branches of the canal and ensure sealing of the root canal system, fillers are materials for filling and sealing the space of the root canal.

Pastes based on calcium, COE, thymol, and epoxy resins are most often used as sealers in permanent teeth with formed roots. For a long time, gutta-percha has been used as a filler.

Pastes for filling the root canals of permanent teeth should have the following qualities:

- 1- Have antiseptic properties;
- 2- Reliably seal the root canal system;
- 3- Do not dissolve in the root canal;
- 4- Do not shrink after filling;
- 5- Do not irritate periodontal tissues.

Where welcome extirpation is carried out if effective analgesia is not possible. This procedure is performed in 2-3 visits.

The first visit involves the preparation of the carious cavity, the opening of the pulp horn and the application of a devitalizing medium.

The second visit involves removal of the dressing, opening of the tooth cavity taking into account its topography, extirpation of the pulp from the root canals. After removing the pulp from the root canals of the permanent tooth, the canals should be sealed.

Quality criteria for filling root canals:

- 1 – uniform material density throughout the root canal
- 2 - tightness of filling
- 3 - optimal degree of filling.

After extirpation, the root canal should be sealed within the limits of the physiological apex, i.e. to the level of the cemento-dentine connection, or within the limits of the physiological apex of the tooth, which is usually located at a distance of 1-1.5 mm from the x-ray apex of the tooth. The treatment is completed by applying a permanent filling.

Insufficient filling of the root canal with a filling material after de-vital extirpation in a permanent tooth in almost 100% of cases leads to the development of chronic forms of periodontitis. Therefore, filling the root canals of permanent teeth in children is an extremely important step in the treatment of pulpitis, its quality determines the future fate of the tooth.

Excessive removal of the filling material beyond the apex of the root can lead to the development of acute or chronic periodontitis.

Filling materials for root canals of permanent teeth must meet the following requirements:

- Have antiseptic and anti-inflammatory properties, do not irritate the periodontium;
- Stimulate the plastic function of the periodontium, strengthen osteogenesis;
- It is easy to enter and exit the root canal;
- Harden slowly;
- Be radiopaque;
- Do not stain tooth tissue;
- Do not shrink and do not dissolve in the root canals

Hardening sealers with gutta-percha pins are used to seal the root canals of permanent teeth.

After the theoretical part of the class , students begin the examination of the

thematic patients, substantiate the diagnosis, draw up a treatment plan, fill out outpatient medical histories.

Control of the level of knowledge acquisition:

1. Indications for devital amputation of the pulp in temporary teeth
2. Stages of the devital method treatment.
3. Indications for devital pulp extirpation in temporary patients teeth
4. Devital amputation technique pulp
5. Technique of devital extirpation pulp
6. Control of the effectiveness of devital methods treatment.

Oriented test tasks:

1. *A 13-year-old child is bothered by pain in the 46th tooth from heat. Objectively: tooth 46 is dirty gray in color, on the chewing surface there is a carious cavity within the softened near pulpal dentin, connected to the cavity of the tooth. Deep probing is painful, reaction to thermal stimuli (hot) is painful. Percussion of tooth 46 is painless. Choose the optimal method of treatment.*

- A. Welcome extirpation.
- B. Welcome amputation.
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

2. *A 15-year-old child complains of pain from thermal stimuli in the tooth on the left upper jaw. Objectively: 26th tooth is discolored, carious cavity within the peripulpal dentin, tooth cavity is open, deep probing is painful. Percussion of the tooth is not painful. What is the most optimal method of treatment?*

- A. Welcome extirpation.
- B. Welcome amputation.
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

3. *A 15-year-old child complains of pain from thermal stimuli in the tooth on the left upper jaw. Objectively: the 26th tooth has not changed in color, carious cavity within the limits of the pulpal dentin, the tooth cavity is open, probing is painful, percussion is negative. What is the most optimal method of treatment?*

- A. Welcome extirpation.
- B. Welcome amputation.
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

4. *An 11-year-old child turned to a pediatric dentist with complaints of acute, spontaneous, attack-like pain in the area of the 13th tooth. During the dental examination, a diagnosis of acute limited pulpitis of the 13th tooth was made. What method of treatment is the most rational in this case?*

- A. Welcome amputation.

- B. Welcome extirpation
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

5. *An 8-year-old child, practically healthy, complains of pain in the front tooth on the left upper jaw as a result of its traumatic injury 2 hours ago. Objectively: the absence of half is observed the crowns of 21 teeth, the pulp is exposed, red in color, sharply painful and bleeding during probing. Percussion of tooth 21 is painless. Choose the optimal method of treatment.*

- A. Welcome amputation.
- B. Welcome extirpation
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

6. *A 9-year-old child complains of a fractured crown and pain in the left upper front tooth. The tooth fracture occurred when the child fell 2 days ago. Objectively: the crown part of tooth 22 is completely missing. The pulp is bare, red, bleeding, sharply painful when probed. What is the most optimal method of treatment in this case?*

- A. Welcome amputation.
- B. Welcome extirpation
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

7. *A 12-year-old child turned to a pediatric dentist for rehabilitation. Objectively: on the chewing surface of the 16th tooth, there is a large carious cavity filled with red soft tissue, which hurts and bleeds when probed. The carious cavity is connected to the cavity of the tooth. Thermometry is mildly painful. Percussion is negative. There is a history of acute spontaneous pain in the area of the teeth of the upper jaw on the right side. No pathological changes in the periodontium were detected on the radiograph of tooth 16. What a method the most optimal treatment?*

- A. Welcome extirpation.
- B. Welcome amputation.
- C. Devital amputation.
- D. Devital extirpation
- E. Conservative (biological) method.

8. *In a practically healthy child of 7 years, a deep carious cavity with light, softened dentin was found on the chewing surface of tooth 36. Probing the day of the carious cavity is slightly painful; cold water causes a long-lasting pain that does not appear immediately. During the treatment, the pulp horn was exposed. KVP=3. Determine the therapeutic tactics in this case*

- A. Welcome amputation.
- B. Biological method.
- C. Devital amputation.
- D. Welcome extirpation
- E. Devital extirpation

9. A 10-year-old patient was diagnosed with acute purulent pulpitis of tooth 36, complicated by acute periodontitis. What treatment method should a pediatric dentist choose?

- A. Vital extirpation of the pulp.
- B. Devital amputation pulp
- C. Devital extirpation of the pulp.
- D. Extraction tooth
- E. Vital amputation of the pulp.

10. As a result of an injury, a 10-year-old child complains of sharp pain from cold and when touching a tooth with his tongue. Objectively: in the 11th tooth, there is an oblique fracture on 2/3 of the length of the crown with significant exposure of the pulp. Sharp pain and bleeding are detected when examining the fracture line. Percussion is painful, the tooth is somewhat mobile in the vestibulo-oral direction. What method of treatment is most appropriate to use in this case?

- A. Welcome extirpation.
- B. Biological method.
- C. Devital amputation
- D. Devital extirpation.
- E. Welcome amputation

PRACTICAL LESSON #1 5

Lesson topic: Errors and complications in the treatment of pulpitis of temporary and permanent teeth in children. Their prevention and elimination.

The aim: To consider possible errors and complications that arise in the diagnosis and treatment of pulpitis in children of different ages.

Actuality: To study the causes of errors and complications that may occur at various stages of treatment of pulpitis, as well as measures for their prevention and methods of elimination.

Control of the initial level of knowledge:

1. Terms of formation and resorption of roots of temporary teeth.
2. Terms of formation of roots of permanent teeth.
- X- ray characteristics.
3. Endodontic tools: types, purpose, rules of operation. Stages of endodontic treatment.
4. Methods of treatment of pulpitis. Showcase application in temporary and permanent teeth in children.
5. Peculiarities of endodontic treatment of temporary teeth in the stage of root resorption.
6. Peculiarities of endodontic treatment of permanent teeth with an unformed root.

Lesson content:

Treatment of pulpitis in children is a responsible and rather complex

procedure, the implementation of which requires strict adherence to the protocol. Sometimes there are situations of improper use of medications, tools, and treatment methods, caused by insufficient professionalism of the doctor, as well as violation of the technology of performing individual manipulations, a small arsenal of modern equipment, tools, and medicines.

So, problems in the treatment of pulpitis in children can be grouped as follows:

- 1) errors that occur at the stage diagnosis;
- 2) errors that occur during treatment;
- 3) complications that arise when performing medical procedures manipulations;
- 4) complications after treatment pulpitis

An incorrect diagnosis is the beginning of a whole series of wrong actions. Errors in the diagnosis of pulpitis in children are associated with the incorrect assessment of the entire set of signs revealed during the examination. It should be remembered that the primary importance here is the data of an objective examination, as well as the correct assessment of subjective data, especially pain syndrome. In addition, a deep carious cavity on the proximal surface of a temporary molar in more than 50% of cases is a sign of irreversible pulp inflammation (Hobson, 1970). Therefore, mechanical, thermal, percussive, radiological methods are used to assess the state of the pulp.

of differential diagnosis of various forms of pulpitis with each other and with other diseases that have similar symptoms (deep caries, papillitis, acute and aggravated chronic periodontitis, sinusitis, alveolitis, etc.) deserves special attention

Errors during treatment are primarily related to the wrong choosing a treatment method for pulpitis, especially milk and unformed permanent teeth. In most cases, this is due to poor knowledge of the timing of teeth eruption, formation and resorption of their roots, indications for choosing one or another method of treatment of pulpitis, methods of performing the chosen method, etc.

A gross mistake in the treatment of pulpitis of temporary teeth at the stage of root resorption or unformed permanent teeth is the use of devital treatment methods with the use of arsenic or paraformaldehyde pastes. It should be remembered that pulpitis of temporary and permanent teeth at the stage of an unformed or resorbed root is usually treated using vital methods of treatment. In addition, in the case of using devitalizing pastes in teeth with an open apex, the development of toxic periodontitis is possible, the treatment of which is not always successful and can lead to root growth arrest or premature tooth loss.

When removing the pulp by extirpation methods, the following errors are possible:

- incomplete deletion pulp;
- trauma to the periodontium and zone growth;
- pushing the contents of the root canal into periodontium;
- inferior instrumental and medicinal treatment of the root canal;
- selection of material for obturation of root canals without taking into

account the period of tooth development;

- Violation of root obturation technique channel

Errors are also possible at the stage of root canal preparation and access creation. High-quality endodontic treatment is possible if access to the root canals is properly created, which requires knowledge of the topography of the pulp chamber and root canals in different groups of teeth. Complete removal of the pulp is ensured by careful instrumentation of the root canal with endodontic instruments (manual or rotary); antiseptic treatment channel trace conduct carefully and combine with mechanical wall decoration Medicinal treatment of root canals of teeth with unformed apices should be carried out with low-concentration antiseptic solutions (0.5-2% sodium hypochlorite solutions) using endodontic syringes and needles, without excessive effort.

Removal of antiseptic solutions beyond the root can cause a number of complications, from increased bleeding from the root canal to the so-called hypochlorite accident or sodium hypochlorite solution entering the maxillary sinus cavity. A hypochlorite accident is the ingress of sodium hypochlorite solution through the apical foramen into soft tissues. It usually occurs when the solution is removed beyond the tops of the buccal roots of the premolars and molars of the upper jaw, which are located under the bone. There is significant swelling and hematoma of the soft tissues of the cheek, possibly the eyelid, which gradually "drops" to the neck.

Removal of sodium hypochlorite beyond the palatal roots of the molars and premolars of the upper jaw can lead to the solution entering the maxillary sinus cavity, which can also be accompanied by bleeding of the mucous membrane of the cavity. In this case, patients will complain of bloody discharge from the nose, and sometimes, bleeding on the back wall of the pharynx.

The treatment of these complications consists in the prevention of joining the infectious component by prescribing anti-inflammatory and antimicrobial agents (antibiotic therapy).

Insufficient knowledge of the topography of the tooth cavity and root canals, non-compliance with the rules and techniques of working with small dental instruments cause such complications as:

- perforation of the walls, bottom of the tooth cavity and walls root;
- hack the tool in the root channels;
- entry of an endodontic instrument into the respiratory tract or alimentary canal.

It is possible to prevent the accidental ingress of endodontic instruments into the patient's respiratory tract by using isolation of the working field with a rubber dam. In addition, the use of a rubber dam ensures compliance with the conditions of asepsis and prevents the accidental ingress of antiseptic solutions into the patient's oral cavity.

Breakage of endodontic instruments in root canals can be avoided by using new instruments , as well as by performing delicate manipulations without excessive effort.

Special attention should be paid to the complications associated with the use

of local anesthetics in the treatment of pulpitis by vital methods. Among them: allergic and toxic reactions, hematoma formation, insufficient analgesic effect, etc.

After the treatment of pulpitis is completed, complications such as the development of acute or chronic periodontitis, removal of filling material into the mandibular canal or maxillary sinus, loss of filling, change in tooth color and others

Thorough knowledge, good manual skills and the absence of undue haste in work, attentiveness and decency of the doctor and his assistant will help to avoid the mentioned errors, and if they occur, to eliminate them competently. In addition, the equipment and organization of the children's dentist's workplace is important.

Control of the level of knowledge acquisition:

1. What are the errors at the stage of diagnosis of pulpitis?
2. Name the mistakes that occur during the treatment of pulpitis in children with welcome methods. To what complications are they lead?
3. Name the errors that occur during the treatment of pulpitis in children with welcome methods. To what complications are they lead?
4. What problems are associated with the use of biological method?
5. What complications may arise during medical manipulations?
6. Complications that threaten the child's life. Urgent help.
7. What complications may occur after treatment pulpitis?

Approximate test tasks:

1. *the root canal of tooth 12 filled due to pulpitis. The next day there was pain when biting. Choose the tactics of the doctor in this case*
 - A. Physiotherapy procedures
 - B. Resection of the apex the root
 - C. Unseal channel.
 - D. To seal others material
 - E. Extraction tooth
2. *A 12-year-old child is being treated for acute diffuse pulpitis of tooth 46. At the first visit, arsenic paste was applied to tooth 46. The patient came for a repeat appointment 4 days later with complaints of constant aching pain in the area of tooth 46, which intensifies when biting the tooth. Objectively: the temporary seal is preserved; percussion is sharply painful; the mucous membrane in the area of tooth 46 is hyperemic, swollen, painful on palpation. What caused this pathology?*
 - A. Toxic effect of devitalizing paste on periodontium
 - B. Incorrectly placed on first visit diagnosis.
 - C. Activation of anaerobic flora
 - D. Violation of the rules of asepsis during dental manipulations.
 - E. Establish the reason hard.
3. *The parents of a 7-year-old child complained of constant aching pain in the area of the 85th tooth, which worsens when biting. Objectively: the 85th tooth has a filling; vertical percussion sharply painful; the tooth does not react to*

temperature stimuli; the mucous membrane in the area of the 85th tooth is hyperemic, swollen, painful during palpation. From the anamnesis, it is known that a week ago the 85th tooth was treated for chronic medium caries. What was the reason complication?

- A. The primary diagnosis was wrong reception
- B. Error when choosing a filling material.
- C. Physiological change teeth
- D. Violation of the rules for the preparation of solid tissues tooth
- E. Incorrect drug treatment of carious cavities

4. To a child 2.5 years Installed diagnosis "chronic fibrotic pulpitis 51 and 61 teeth. What material should be used for obturation of root canals?

- A. Zinc-eugenol paste.
- B. Resorcin-formalin paste.
- C. Glass ionomer cement.
- D. Phosphate cement.
- E. Thermoplastic gutta-percha.

5. The girl is 7 years old. During the examination of the oral cavity, the child turned pale, cold sweat appeared on the forehead, the pulse was threadlike, rhythmic; pupils are narrowed, breathing is shallow, heart sounds are muffled. After a single bout of vomiting, the child stopped responding to others. How probable diagnosis?

- A. Dizziness.
- B. Anaphylactic shock.
- C. Collapse.
- D. Hyperglycemic coma.
- E. Hypoglycemic coma.

6. A 15-year-old patient complains of pain from temperature stimuli and spontaneous pain in the 26th tooth. A week ago, the tooth was treated for pulpitis. Objectively: the 26th tooth is sealed, percussion is sensitive, the reaction to temperature stimuli is manifested by long-lasting pain and gradual him strengthening X-ray: palatine 2/3 of the root canal is sealed, obturating material is not visible in the buccal canals. What could be the possible cause of such a complication?

- A. Incomplete extirpation of the pulp.
- B. Development of inflammation in periodontics
- C. Improper root filling channels
- D. Injury to the periodontium during surgery processing
- E. Inadequate medicinal treatment of roots channels

7. A 13-year-old patient was diagnosed with acute purulent pulpitis of tooth 45. Dissection, extirpation of the pulp, mechanical and medicinal treatment of the root canal were carried out. How to perform root canal filling in this case?

- A. For the entire working day length
- B. To the anatomical apex.
- C. To the x-ray tops
- D. To physiological tops

E. By the top

8. A 16-year-old patient complains of sharp pain in tooth 36, which intensifies when biting on it. 4 days ago she was an arsenic paste was applied, but the girl did not show up for the appointment at the appointed time . Objectively: in the 36th tooth, the bandage is preserved, percussion is painful, after mechanical and medicinal treatment of the root canals, the turunda is moist and colorless . There are no changes in the periapical tissues on the x-ray. What medicinal substance should be left in the root canals to achieve the maximum clinical effect?

A. Unitiol.

B. Hydrogen peroxide 3%.

C. Trypsin.

D. Chloramine.

E. Chlorhexidine.

9. The child is 7.5 years old, practically healthy. Complaints about a fracture of the crown part and pain in the front right upper tooth. Objectively: 2/3 of the crown part of the 11th tooth is missing, the pulp is exposed, red in color, sharply painful and bleeding during probing , painful percussion . 2 hours have passed since the injury . Choose a treatment method .

A. Welcome amputation.

B. Devital extirpation

C. Biological.

D. Devital amputation.

E. Welcome extirpation

10. A 15-year-old girl was treated for pulpitis of the 16th tooth. During the endodontic intervention, a difficult -to -pass medial buccal root canal was found. What tool can be used for chemical expansion of the root channel?

A. EDTA.

B. Resorcin-formalin liquid.

C. Hypochlorite sodium

D. broad- spectrum antibiotic actions

E. 30% silver nitrate solution.

Recommended Books.

Basic literature:

1. Therapeutic dentistry for children. T.1 . "Dental caries and its complications" / L.O. Khomenko, Yu.B. Tchaikovsky, N.I. Smolar [etc.]; under the editorship L.O. Khomenko - Book-plus, 2016. - 432 p

2. Therapeutic stomatology of childhood : textbook Volume 1. / L. AND. Khomenko, [i others]; under the editorship L. AND. Khomenko - K.: Book-plus, 2018. - 395 p.: clay, tab.

Additional literature:

1. Khomenko L.O., Therapeutic dentistry of children's age. t.1 .- Kyiv. The book is a plus. – 2016. p. 432

2. Khomenko L.O. Therapeutic dentistry for children. Volume 2. Kyiv. The book is a plus. – 2016. p. 328
3. Baranskaya-Gakhovskaya M. Endodontics of adolescent and adult age. - Lviv: GalDent, 2011. - 496 p.
4. Borysenko A.V. Dental caries. Practical guide. - K.: Knyga plus, 2000. - 344 p.
5. Borysenko A.V. Secrets of caries treatment and tooth restoration. - K.: Knyga plus, 2002. – 335 p.
6. Borysenko A.V. Composite sealing materials. - Kyiv: Book plus, 1998. –168 p.
7. Gugal M. et al. Atlas of restoration of milk teeth. - Moscow: Lory, 2001.
8. Danylevskiy M.F., Sidelnikova L.F., Rakhniy Z.I. Pulpit. - K. Zdorovya, 2003. - 168
9. Deltsova O.I., Tchaikovskiy Y.B., Herashchenko S.B. Histology and embryogenesis of oral cavity organs: textbook. - Kolomyia: VPT "Vik", 1994. - 94 p.
10. Nikolysyn A.K. Modern endodontics of a practical doctor. – Poltava, 2003. – 208
11. Paterson R., Watts A., Saundere V., Pitts N. Modern concepts in the diagnosis and treatment of fissure caries. Overview of clinical methods and materials. - London: Quintessence publishing house, 1995. -78 p.
12. Disorders of development and formation of teeth: education. manual for students, intern doctors, dentists / E. V. Bezvushko, M. M. Ugryn, Z. R. Popovych; rec.: L. F. Kaskova, O. V. Denga. - Lviv: GalDent, 2007. - 72 p.
13. Propaedeutics of children's therapeutic dentistry (edited by Prof. L.O. Khomenko). - K.: "Book Plus", 2011. - 320 p.
14. Helvig E., Klymek Y., Attin T. Therapeutic dentistry / Ed. Prof. A.M. Polytun, prof. N.Y. Smolar Trans. with German - Lviv: GalDent, 1999. - 409 p.
15. Khomenko L.A., Ostapko E.I., Bydenko N.V. Clinical and radiological diagnosis of dental and periodontal diseases in children and adolescents. - Kyiv: "Knyga plus", 2004. - 200 p.
16. Khomenko L.A., Bydenko N.V. Practical endodontics tools, materials and methods. - Kyiv, Kniga plus, 2002. - 216p.
17. Khomenko L.A., Savychuk A.V., Bydenko N.V., Ostapko E.I. etc. Prevention of stomatological diseases: uch. allowance - Part 1. - K.: "Book Plus", 2007. -127 p.
18. Khomenko L.A., Savychuk A.V., Bydenko N.V., Ostapko E.I. etc. Prevention of stomatological diseases: uch. allowance - Part 2. - K.: "Book Plus", 2008. -132 p.