

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

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METHODICAL RECOMMENDATION
for independent work of students during the preparation
to practical lessons and on the lessons

Academic discipline	Orthodontics
Module № 2	Anomalies and deformation of denta-jaw region
The theme of the lesson № 1	Anomalies of individual teeth. Anomalies of teeth number. Anomalies of teeth eruption.
Course	IV
Faculty	Preparation of foreign students

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1. The relevance of the topic. Numerous etiological factors contribute to the violation of the harmonious development of the dental and alveolar arcs, which leads to incorrect position of teeth and the formation of malocclusion, each of which requires appropriate and timely intervention, therefore, knowledge of the characteristics of the formation of each type of abnormalities of the dental arches will give the ability to prescribe the right orthodontic treatment to achieve stabilization of the bite.

2. Specific objectives:

To examine the group factors that lead to the development of anomalies of individual teeth.

To determine the factors that contributes to the development of anomalies of individual teeth in the antenatal period.

To determine the factors that lead to the development of anomalies of individual teeth in the postnatal period.

To plan treatment accordingly the shape anomaly of the dentition.

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

Name of previous disciplines	Skills
1. Histology	histological structure of teeth and rudiments.
2. Anatomy	to know features of the structure of individual teeth and jaws.
3. Pathological physiology	mechanisms of development of deformations of maxillofacial system under the influence of different etiological factors.
4. Medical biology	the mechanisms of inheritance pathology of individual teeth.

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

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

Terms	Definition
1. Adentia	Missing teeth or tooth
2. Hypoplasia	The symmetrical arrangement of defects in dental tissue not only on the same teeth (incisors and first molars), but at the same portions of the surface of the crowns
3. Macrodonia (giant teeth)	The result of the merger of two teeth follicles or follicle completely and the supernumerary tooth

4.2. Theoretical questions to the lesson:

1. Factors that contribute to the development of anomalies of individual teeth in the antenatal period.
2. The factors that lead to the development of anomalies of individual teeth in postnatal period.
3. Classification of anomalies of individual teeth by Kalvelis.
4. Diagnostic methods for fused teeth.
5. Diagnostic methods for retained teeth.
6. Methods of treating structure anomalies of the hard tooth tissues.
7. Enumerate methods of treating retained teeth.
8. Peculiarities of treating teeth quantity anomalies.
9. Peculiarities of treating teeth size anomalies.
10. What classifications of teeth development anomalies do you know?
11. Busch's supplemental teeth classification.
12. Etiological agents causing teeth development anomalies.
13. Etiological agents influencing teeth color anomalies.
14. Enumerate diagnostic methods of examining patients with teeth development anomalies.
15. What tests are conducted for the differential diagnostics of structure anomalies of the hard tooth tissues?

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

- Determination of risk factors of development of individual teeth anomalies;
- Definition of pathogenesis of individual teeth anomalies;
- Determining the risk of development of individual teeth anomalies;
- Definition of forecast of occurrence of individual teeth anomalies.

The content of the topic:

Individual teeth development anomalies are a widespread pathology causing a number of problems. According to the investigations data, this pathology is found in 12–22 % cases of all dento-gnathic anomalies and deformations.

There are the following classifications of individual teeth development anomalies.

Noncaries teeth affection classification (Stewart, Prescott, 1976):

1. Teeth number anomalies:
 - a) hyperdontia;
 - b) hypodontia.
2. Teeth size anomalies:
 - a) microdontia or macrodontia;
 - b) fused teeth;
 - c) teeth coalescence.
3. Teeth form anomalies.
4. Enamel structure anomalies:
 - a) enamel dysplasia;

- b) enamel hypoplasia caused by external agents;
- c) local enamel hypoplasia;
- d) enamel hypocalcification.

5. Dentin structure anomalies:

- a) dentinogenesis imperfecta;
- b) dentin dysplasia;
- c) regional odontodysplasia.

6. Cement structure anomalies.

7. Teeth color anomalies.

Noncaries hard tooth tissues affection classification (T.F. Vinogradova, 1978):

1. Anomalies, conditioned by external agents:

- a) systemic enamel hypoplasia;
- b) aplasia of milk teeth enamel in dysmature infants;
- c) local enamel hypoplasia caused by an injure;
- d) dental fluorosis;
- e) “tetracycline teeth”.

2. Inherited anomalies, anomalies caused by imperfect hard tooth tissues structure:

- a) amelogenesis imperfecta;
- b) dentinogenesis imperfecta;
- c) Steinton–Capdepon’s syndrome.

3. Anomalies of teeth number, size and form, genetically conditioned by heredity of the autosomal-dominant type.

4. Structure anomalies and tooth tissue malformations, arising as a result of a systemic pathology in the child’s organism:

- a) Hutchinson’s teeth at hereditary syphilis;
- b) “amber” teeth at osteogenesis imperfecta;
- c) grey-blue and brown teeth at hemolytic syndrome.

Color anomalies.

Tooth color mainly depends on enamel color, and enamel is the tissue rendering color normally. Teeth color is very different in different people as it is a hereditary character. This explains the scale of artificial teeth hues, by which we are guided during dental prosthesis making. There are cases of inheriting the blue or pink enamel color by enzygotic twins.

One should differentiate congenital and acquired teeth color. The latter may be conditioned by hard tooth tissues impregnation with any staining solution. Thus, at filling the root canals with resorcin-formalin paste the tooth later acquires the pink color (color insert), and at silver-plating – taupe. There has been observed hard tooth tissues color change caused by taking medicines, for example, tetracycline (from primrose to deep-brown). Now this preparation is not used in pharmacopeia, but other may appear. Only correctly obtained anamnesis may help in conducting differential diagnostics. Tooth color changes under the influence of not only exogenous, but also endogenous factors: smoking, foodstuffs coloring

matter, lead influence at production plants. These color changes are mainly superficial – in the form of incrustation. The treatment consists in: refilling of the canals and tooth, and then dental bleaching with chemical solutions; intact teeth bleaching with ultraviolet rays (quartz).

Most often orthodontic treatment is resorted to, i.e. tooth replacement.

Hard tooth tissues structure anomalies.

Tooth tissues have different origin: ectodermal (enamel) and mesodermal (dentin, pulp, cement).

Teeth development process consists of the following stages:

- tooth anlage;
- tooth crown formation;
- loss of mineral enamel components;
- formation and loss of root dentin mineral components;
- eruption;
- root dentin and cement formation;
- root resorption (of temporary teeth);
- final enamel formation under the influence of saliva.

All the enumerated processes take place with the participation of life support systems sustained by the tooth pulp, periodontium, and saliva.

Tooth structure and development may be the result of inherited and acquired defects of the primary tissue (ectoderm and mesoderm), of which the enamel, dentin, and cement develop; also anomalies may arise as a result of the violation of the formation mechanism of the tooth crown enamel and dentin, root dentin and cement, the mechanism of the tooth eruption and root resorption. Besides, structure anomalies and malformations of the tooth may arise and develop as pathogenesis regularities of a systemic pathology – genetic, congenital or acquired.

Tooth structure and development anomalies may be classified according to T.F. Vinogradova (1987).

Hereditary tooth tissue structure anomalies are conditioned by imperfect structure of the tissues forming the enamel and dentin (hereditary diseases are conditioned, as a rule, by hereditary fixed genetic code changes, the so-called mutations). The latter may be both caused by external agents (e.g., ionizing radiation) and arise under the influence of the internal environment of the cell or the organism as a whole:

- ✓ Steinton-Capdepon's syndrome (hereditary derangement of the enamel and dentin structure; autosomal-dominant inheritance);
- ✓ amelogenesis imperfecta of the hypoplastic type (recessive inheritance, attached to Y-chromosome, or autosomal-dominant);
- ✓ dentinogenesis imperfecta of the hypoplastic type (recessive inheritance).

Anomalies of teeth number, size, and form are conditioned by vertical transmission. The type of isolated pathology inheritance is autosomal-dominant.

Structure anomalies and malformations of tooth tissues, arising as regularities of systemic pathology pathogenesis in the child's organism (hereditary, congenital, and acquired):

- ✓ “amber” teeth at amelogenesis imperfecta;
- ✓ Hutchinson’s teeth at hereditary syphilis;
- ✓ grey, grey-blue, brown teeth at hemolytic syndrome and hemolytic jaundice of different etiologies;
- ✓ adentia, hypodontia and spinous teeth at ectodermal dysplasia; microdontia at hypophyseal nanism.

Structure anomalies and malformations of tooth tissues conditioned by the influence of external agents:

- 1) fluorosis;
- 2) “tetracycline teeth”;
- 3) systemic nonspecific hypoplasia of the tissues of temporary and permanent teeth;
- 4) partial or complete aplasia of the temporary teeth enamel in premature infants;
- 5) focal hypoplasia conditioned by an injury, “exposing enamel to the wind” (at mouth breathing);
- 6) inflammatory processes;
- 7) tumors, cysts, etc.

Hyperplasia declares itself by the presence of a sharply limited mass covered with enamel (the so-called enamel drops) on the neck or root cement. Hypoplasia is characterized by the symmetric location of dental tissue defects not only on homonymous teeth, but also on the similar parts of the crown surface. Hypoplasia testifies to mineral metabolism disorder and bony skeleton decalcification in infancy. Central incisors affection with hypoplasia allows talking about decalcification process during the first year of the child’s life, in case of all teeth affection – about the continuation of the process till later age.

Fluorosis is a kind of hypoplastic teeth affection conditioned by fluorine content in drinking water (more than 1.2 mg per liter). At that enamel decalcification arises, declaring itself by macules appearance. Fluorosis differs from caries by the fact that a fluorosis macula is lighter than the carious one. Fluorosis macules are mainly located on the mastication tubercles, and carious ones – in the fissures and on the approximal surfaces. Besides, fluorosis macules are located symmetrically. I.O. Novik differentiates 3 stages of teeth affection with fluorosis:

- 1) paper-white and slightly pigmented small macules of the enamel (slight fluoride intoxication);
- 2) maculation takes more than a half of the crown surface (moderate intoxication);
- 3) maculation affects the whole tooth and is combined with enamel erosions. Most often all the teeth are affected at that (severe fluoride toxicosis, which is often combined with other pathologic factors – rickets, infantile tetany, tuberculosis, other infectious diseases).

Teeth form anomalies.

Teeth form anomalies are most often caused by their germs development pathology. There are differentiated anomalies of teeth roots and crowns.

Crown form anomalies may concern both the morphological peculiarities of the mastication and incisal surfaces of teeth and crown size. They include:

- 1) spinous teeth, Hutchinson's teeth, deformed teeth – adelphomorphous, for example, "dens in dentis";
- 2) microdentia;
- 3) macrodontia (big or gigantic teeth).

To conduct perfect differential diagnostics one must detect the number of teeth. As a rule, supplemental teeth are spinous, but there are cases when complete teeth have this form. This mainly concerns the upper lateral and lower incisors. Sometimes the central left incisors are of atypical shape.

The mentioned pathology is treated by means of orthodontic methods, restoration of the correct anatomic form of teeth with the help of cosmetic crowns, or by means of therapeutic methods – with the help of restoration with composite materials.

Fused teeth are a special anomaly of teeth development. They were first mentioned in The Guide to Treating Teeth Diseases, translated into Russian under the editorship of Professor Hrube and published in 1898 in Kharkiv. The chapter on teeth anomalies was written by famous Munich Professor A. Sternfeld.

A. Sternfeld differentiates:

- 1) accreted teeth;
- 2) fused teeth;
- 3) double teeth.

As the author points out, fusion concerns only roots, when cement forms a common layer around the roots of two neighbouring teeth. Fusion means organic conjugation of the dentin of two neighbouring teeth. Fusion may spread on the whole two teeth or only on their crowns. According to the author, formation of double teeth is conditioned by the presence of supplemental germs (in one dental sacculus there develop two germs instead of one; then they fuse partially or completely).

Wedl considers that double teeth form because of two dental germs presence instead of one. Fusion differs from union by the fact that union happens with the help of cement after the process of teeth formation is finished, and fusion takes place during neighboring teeth formation. According to the author, only teeth roots are subject to union with the help of cement. A. Sternfeld notes that when teeth fuse, dentinal mass of one tooth turns into the other tooth dentinal mass. Over such dentine mass in the region of root part there forms a common cement capsule, and in the crown part – common enamel membrane. Fusion border is marked by a more or less evident sulcus. Fusion might take place on the whole surface of teeth and be complete. When it is partial, either crowns or roots are fused. The pulp cavity of the fused teeth may be common (single), separate, and split (i.e. two-pronged near the root or crown part). Thus, pulp cavities fusion is not the main characteristics of teeth fusion.

In the literature one may find data about the fusion of supplemental teeth with complete teeth. Some authors deny this, which testifies to ideas disagreement.

Both milk and permanent teeth may be fused. The frontal group of teeth is subject to fusion most of all, these are permanent central and lateral incisors with supplemental teeth, milk lateral incisors with milk canine teeth (more often complete milk teeth are fused). Therefore in the period of milk occlusion fused teeth do not violate the dental arches and occlusion formation. Fused milk teeth are extracted with time if they stay in the dental arch too long. Timely extraction is the most important thing in such a case.

Until recently fused permanent teeth were, as a rule, extracted. But this way of solving the problem is not expedient. The most esthetically efficient variant of orthodontic treatment of the dental arches is preserving the frontal teeth, including the canine teeth (the so-called “esthetic six”), as they have no similar teeth in the dental arch. On the grounds of clinical, roentgenological, and histological investigations S.I. Doroshenko (1991) differentiates four types of fused teeth:

- the 1st type – layering or building-up of a supplemental part in the form of tubercles;
- the 2nd type – crown part fusion;
- the 3rd type – roots fusion;
- the 4th type – teeth fusion along the full length.

The author offered an original method of treating this anomaly, which consists in the hemisection of the less valuable part of the tooth and putting the remaining part into the necessary shape. There have been worked out different techniques of hemisection depending on the character of fusion, its length, the patient's age, and orthodontic treatment aimed at closing the formed diastems and diaereses:

- 1) treating the teeth fused at separate pulp cavities;
- 2) treating the teeth fused at a single pulp cavity;
- 3) cautious treatment of fused teeth with the help of ledged hemisection;
- 4) a technique of orthodontic treatment of fused teeth.

Teeth number anomalies.

Normally a person has 32 teeth in the permanent period, and 20 – in the milk one. Adentia or teeth absence is shown.

There are such adentia types:

- 1) primary (i.e. congenital absence of germs);
- 2) secondary or acquired (germs absence because of their destruction as a result of temperature or radiation influence, an injury. But it is not expedient to refer here the secondary adentia caused by teeth extraction).

Besides there are:

- 1) partial adentia, when a couple of teeth are absent (1-3);
- 2) multiple adentia (4 teeth and more);
- 3) complete adentia.

Complete absence of teeth is a rare phenomenon. In our hospital there have been only three such cases in the last 20 years (in two of them there was one retained tooth).

Partial adentia is observed very often. This phenomenon, as D.A. Kalvelis (1964) notes, is explained by the physiological reduction of teeth quantity. Subject to reduction are the upper lateral incisors and 3rd molars – from form change (spinous) to complete disappearance. The slightest form of partial adentia is the absence of one lateral incisor. When two of them are absent, esthetic defect becomes more visible. If lateral incisors absence causes spaces appearance between teeth, multiple adentia causes dental arches defects with the following deformation of occlusive interrelations and also occlusion as a whole; thus it requires complex special interventions. Therefore it is impossible to view the multiple congenital absence of teeth as a phenomenon of phylogenetic reduction. In such cases we should talk about a general systemic disease – the so-called syndrome of ectodermal dysplasia.

3rd molars absence does not provoke any dento-gnathic apparatus complications. But their presence in a jaw may lead to recurrences or complications of dento-gnathic anomalies (in corresponding cases) in case of their coming out. Taking this into account, some authors consider timely extraction of 3rd molars germs expedient.

Adentia treatment must aim at the restoration of dental arch integrity with a positive esthetic effect. In other words, at providing functional and cosmetic value of the dento-gnathic apparatus.

Treatment methods at adentias are orthopedic (prosthetic) and combined – in complex with orthodontic (instrument) and surgical methods.

The orthopedic method, restoration of dental arch defects with removable and fixed dentures, is not full-value. The combined method, i.e. complex treatment, should be preferred. First of all preliminary preparation of the oral cavity to prosthetics is needed: endodontic preparation, which consists in the removal of the persistent temporary teeth pulp under the condition of root resorption absence. This allows timely elimination of undesirable diseases of the pulp as a resorption organ and in such a way the prolongation of temporary teeth staying in the dental arch, which is especially important at multiple adentia of permanent teeth. Such teeth, as it has been shown by our chair workers, may be used as support for dentures of more efficient construction; orthodontic preparation consists in correct distribution of teeth in the dental arch with the help of orthodontic appliances.

If lateral teeth are absent (one or two) diastems and diaereses appear. Canine teeth shift to the place of lateral incisors. Preliminary preparation consists in instrument dislocation of canine teeth distally and central incisors – medially (i.e. diastems reduction) with the purpose of creating space for false lateral incisors. There can be used both removable and fixed orthodontic appliances for teeth transfer. Not infrequently spaces in the dental arch at lateral incisors adentia are, vice versa, reduced by means of transferring them to the place of canine teeth. In such cases with esthetic purpose canine teeth are restored by the form of absent teeth with composites or are covered with esthetic crowns (plastic, combined). Larger defects are compensated with removable dental prostheses.

Surgical preparation is especially important at multiple or complete adentia and consists in teeth transposition or implantation. Multiple and partial adentia is referred to ectodermal pathology. There are observed deviations in other organs at multiple and complete adentia. Thus, in patients with adentia hair-covering is underdeveloped (lanugo or absence of hair), they have less or no sweat glands. In this connection evident xerodermia develops (asperity, fissures, etc.). Water and warmth metabolism is violated, which leads to complications, especially in warm periods of the year and at physical loads. Organism superheating may cause shock and more severe consequences.

At adentias there is marked the inferiority not only of the dental tissue but also of the bony one. Such an important biological stimulation of growth as eruption is absent. As a result the alveolar processes are underdeveloped. Removable dental prostheses application, especially of irrational construction, complicates the situation, and bony tissue atrophy progresses. Alveolar processes are not adapted to such a way of mastication load transfer. Attempts of wide usage of implantation have been futile, which is explained by bony tissue inferiority. Thus, for now we have germs transplantation and search for new methods of treatment.

G.Y. Dranovskiy (Makhachkala, Daghestan) is reported to have successfully transplanted teeth germs. He conducted germs transplantation (allotransplantation) experimentally on 331 dogs (puppies and mature animals), and then on patients (14 of them had positive results). The technique consisted in taking germs from a donor (cadaver) and preservation; the bank was created. Then the germs were implanted into the recipient's bone. Germs transplantation may be conducted:

1) by the intraoral method (it has its drawbacks, at block anesthesia, wound infection, more long-term healing);

2) by the extraoral method (at general anesthesia but quicker; a scar remains on the face, which is not advantageous from the esthetic point of view, especially in girls).

The surgery consists in the following: a trapezoid mucoperiosteal flap is detached, the bony tissue is exposed; an appropriate bed for the allograft is prepared in the bone; the wound is sutured.

Supplemental teeth (hyperdentia)

In the eocene period the dental arch of many mammals, including human predecessors, consisted of 44 teeth. Appearance of more than 32 teeth in the human dentition in the permanent period is considered by A. Stemfild (1898) and D.A. Kalvelis (1964) an obvious return to the past – an atavism. Supplemental teeth appear mainly in the places where mammals used to have a lot of them. Indeed, rather often we observe teeth number increase in the region of incisors and premolars (3rd incisors, 3rd or even 4th premolars).

Thus, we can speak of teeth number increase in the cases when there are more than 20 teeth in milk occlusion and more than 32 – in the permanent one.

Busch singles out three types of supplemental teeth:

1) aculeiform with a peg-shaped crown and root;

2) tuberos teeth with a tuberos crown and a fimnel-form retraction of its surface (these are also called premolar-like teeth);

3) resembling complete teeth.

Kollmann differentiates two types of supplemental teeth formation:

- appear simultaneously with permanent teeth;
- develop slowly oae after another. The author explains this in such a way: detachment of “odd” germs (“enamel processes”) from the dental plate may happen both horizontally and vertically.

Supplemental teeth not only violate the correctness of incisors structure, but also may violate the process of eruption. Supplemental teeth eruption is connected with excessive jaw growth, which in its turn may condition dento-gnathic deformation appearance. Most often supplemental teeth come out between the central incisors or in their place.

The treatment lies in extracting such teeth, as a rule. But sometimes supplemental teeth, reminding complete ones by their shape, are preserved, and affected; irregularly located complete teeth are extracted. After extracting supplemental teeth orthodontic (instrument) treatment is often needed with the purpose of regular teeth location.

ERUPTION ANOMALIES

Retained Teeth

Eruption delay is called retention. Both permanent and milk teeth may be retained, but milk teeth – rarely. Permanent teeth are retained more often, as a rule, in the following location: canine teeth, 2nd premolars, 3rd molars, central incisors, lateral incisors. Canine teeth are retained because of insufficient jaw growth; 2nd premolars are often retained because a 2nd temporary molar is prematurely extracted, then the 1st permanent premolar shifts medially to the 1st molar.

Retained teeth may cause incorrect location of neighboring teeth, their inclination and formation of spaces between teeth. Retention is considered to be caused by the general disease of endocrine glands; genetic conditionality of the process is possible. Today the reasons for teeth retention are premature extraction of milk teeth, mastication insufficiency, disuse of hard food – dried crusts, not grinded carrot, apples, etc.

Retention may be partial (absence of one or a couple of teeth) and complete (all teeth are absent). At permanent teeth retention sometimes in the roentgenogram there can be seen rudimentary clavicles, crown of head and cranial sutures nonclosure; this anomaly was named after the authors – Andorson-Pekker’s syndrome). We observed complete retention in a 15-year-old female patient with hypophysial nanism, conditioned by the violation of adenohypophysis function. The patient is of dwarfish stature (disproportional dwarf), has underdeveloped limbs, joints osteochondrosis. There are no teeth on the upper jaw, and on the lower one there comes out one of incisors with considerable inclination to the alveolar process. In the roentgenogram in the bone thickness there are almost all the germs of teeth of ugly form. Teeth crowns are at the stage of mineralization, they are kind of “corroded” with resorption areas in the form of varnish,

resembling “melted snow”. The alveolar crests are round and wide, the palate is deformed.

Besides, retention may be caused by: root apices deviation; injury; cysts; inadequacy of crowns and jaws sizes.

Retention is diagnosed by roentgenograms. Retained teeth may be completely formed or not formed and located with a different degree of inclination. F.Y. Khoroshilkina with co-authors (1977, 1982) offered to divide eruption disturbances into three retention degrees:

- the 1st degree – idiopathic (conditioned) retention, characterized by slow germ development compared to the symmetrical one;
- the 2nd degree – dental retention is conditioned by the inclination of their longitudinal axes by 15° relative to the tooth in front; lack of space, dental arches underdevelopment, etc.;
- the 3rd degree – constant retention, characterized by tooth anlage not in the direction of its coming out.

V.P. Nespriadko (1985) singles out three clinical forms of eruption pathology:

- 1) temporary retention;
- 2) half-retention;
- 3) constant retention of permanent teeth.

The main criteria of this division were the terms of permanent teeth coming out, the degree of their roots formation, and also the mechanism of the eruption of permanent teeth, retained earlier.

The choice of treatment method depends on retention degree and type. The teeth standing straight after the extraction of supplemental and milk teeth and bony tissue decortication can be “placed” into the dental arch. If it is impossible to have the tooth come out, at space present in the dental arch, transplantation is possible, but such a tooth is short-lived. An original technique of treating retained teeth was offered by V.P. Nespriadko. The technique consists in the following: a trapezoid incision is made on the soft tissues to the bone under block anesthesia and a mucoperiosteal flap is detached. With the help of a drill or chisel a bone layer is taken off, the retained tooth crown is exposed. The crown is exposed to the equator, the bony tissue adjacent to it is removed with a thin drill. An elongated metal crown (previously prepared) is selected for the exposed part of the retained tooth crown, the crown is to be put onto the tooth without effort but fit it tightly and project over the crest of the alveolar process by not less than 5-6 mm. If the retained tooth is directed to the side of the opposite dental arch, it is desirable that the elongated crown touches the opposing teeth with its alveolar surface by the type of inclined plane. If it is necessary to correct the position of the retained tooth, hooks are soldered to the crown and the necessary orthodontic appliance is made. To the author’s mind, the elongated crown promotes the transfer of functional pressure, which is the strongest stimulator of eruption, onto the retained tooth.

There are other surgical methods of treating dental retention: decortication, tooth crown exposure with subsequent plugging; decortication – relieving the

crown part of the retained tooth from the bony tissue, attaching a metal loop (ligature) around the anatomic neck with the following delivering of the free end of the ligature into the oral cavity. But their fundamental defect is the fact that all of them are too traumatic and cause complications: wound infection, loop rupture (requires repeated intervention), bony tissue loss, development of the mucous tunic and bone healing tissue.

In recent years more protective treatment methods have been widespread. Thus, I.Y. Androsova (1977) with the purpose of eruption stimulation offered to use hansurid, V.V. Halenko (1986) – impulsive electrostimulation and electrophoresis with adrenaline in the region of retained teeth.

Positive results of treating retained teeth have been obtained at the application of new treatment methods, offered by the workers of the Chair of Orthodontics and Prosthodontics Propedeutics of O.O. Bohomolets NMU (vibratory influence with the application of lydasa phonophoresis with hansurid; vacuum therapy).

Another important question concerns the time when it is expedient to extract a retained tooth and whether it should be extracted if there is no hope of eruption. In this connection the publication of English scholars C. Tracey and R.T. Lee (1985) is interesting: they demonstrated that retained teeth may be “aggressive”, i.e. cause destruction of neighboring teeth roots, sometimes with pulp dragging.

An essential question is the presence of space in the dental arch for retained tooth eruption. At that, complex treatment is important – it includes instrument treatment, stimulation methods, and teeth extraction according to indications.

There are differentiated premature and delayed eruption.

Specialists have observed cases of erupted temporary teeth present in newborns. In such cases the teeth are as a rule extracted to provide normal feeding of the child.

Teeth eruption is one of morphophysiological signs of organism development. Children with higher indices of physical development have more premature teeth erupted. It has been ascertained that most teeth come out in girls earlier than in boys.

Thus, the process of teeth eruption is influenced by a number of different factors: local and general, endogenous and exogenous.

A special place is taken by retention caused by irregular teeth anlage (atypical position). Literature describes cases of teeth coming out into the nasal cavity, maxillary sinus, and even eyesocket (A.I. Marchenko, 1962).

Materials for self-control:

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

- to sketch in the album the individual teeth anomalies classification.

B. Tasks for self-control:

1. A group of separate teeth anomalies are represented in the following classification:

D. A. Kalvelis
A. Y. Katz
E. Engle
A. I. Betelman
L. P. Grigorieva

2. The group of separate teeth anomalies includes:
teeth sizes and form anomalies
canines dystopia
teeth protrusion
teeth rotation
diastema

3. The teeth number anomalies include:
adentia and supernumerary teeth
macro- and microdentia
hypoplasia of dental crowns
thorn-liked teeth
delayed eruption of teeth

4. The teeth size and shape anomalies include:
the Hetchinson, Fournier teeth
hypoplasia of dental crowns
diastema
teeth rotation
supernumerary teeth

5. The impacted teeth are referred to:
the eruption process disorder
teeth sizes and form anomalies
the hard tissues structure teeth anomalies
anomalies of number of teeth
hypoplasia of dental crowns

6. Primary adentia is caused:
malformations
inflammatory process
injury
tumor growth
premature tooth extraction

7. Secondary adentia occurs because:
premature tooth extraction
crowding

delayed eruption of teeth
early teeth eruption
malformations

8. The number of missing teeth divided:
partial, multiple, full
primary, secondary
single, full
single, multiple
multiple, full

9. The treatment of multiple adentia should be:
comprehensive
instrumental
orthopedic
surgical
functional

10. Clinically, supernumerary teeth occur:
large number
abnormal location
retention
anomalies of the hard tissues structure
size anomalies

11. Main method of supernumerary teeth diagnosis is:
orthopantomography
anthropometry
photometry
straight cephalometry
lateral cephalometry

12. The most optimal treatment of supernumerary teeth are:
instrumental and surgical method
instrumental and prosthetic method
instrumental method and massage
instrumental method and myogymnastics
instrumental method the physiological pressure

13. The term “tooth size anomalies” are changes:
the width of the teeth
thickness of the teeth
sizes of cutting edges
the height of the teeth

the teeth structure

14. The types of macrodontia:

absolute, relative

true, false

single, multiple

full, partial

symmetrical, asymmetrical

15. To determine anomalies of tooth size, use the method:

Tonn

Gerlach-Herbst

Pont

Howes

Linder-Hart

16. Absolute macrodontia of the upper incisors is diagnosed if the sum of their mesiodistal sizes exceed:

35.0 mm

37.0 mm

33,0 mm

31.0 mm

29,0 mm

17. Absolute macrodontia of the lower incisors is diagnosed if the sum of their mesiodistal sizes exceed:

29,0 mm

27,0 mm

25.0 mm

23.0 mm

21,0 mm

18. Relative or individual microdontia of the upper incisors is diagnosed if the sum of their mesiodistal sizes smaller:

28.0 mm

27 mm

30.0 mm

29,0 mm

26,0 mm

19. Relative or individual microdontia of the lower incisors is diagnosed if the sum of their mesiodistal sizes smaller:

20.0 mm

23.0 mm

22.0 mm
21,0 mm
24.0 mm

20. Treatment of absolute macrodontia includes:
reducing the dentition size or the teeth number
increasing the length of the dentition
aesthetic prosthetics
to increase the width of the dentition
to increase of the apical bases of the jaws

21. Treatment of microdontia is:
increase of tooth size
to increase the dentition length
to increase the dentition width
to increase in the parameters of the apical bases of the jaws
all answers are correct

22. The Hutchinson teeth this:
the keg-like shape of central incisors with semilunar notch on the cutting edge
the keg-like shape of lateral incisors with a semilunar notch on the cutting edge
the damage of the premolars
the damage of the molars
the damage of the canines

23. The Fournier teeth is:
the keg-like shape of lateral incisors without semilunar notch on the cutting edge
the keg-like shape of lateral incisors with a semilunar notch on the cutting edge
the damage of the premolars
the damage of the molars
the damage of the canines

24. The Turner teeth are:
the presence of local hypoplasia
systemic hypoplasia
the presence of fluorosis
the imperfect amelogenesis
the imperfect dentinogenesis

25. Impacted teeth represents:
delayed teeth eruption
early teeth eruption
the impossibility of eruption
accelerating teeth eruption

premature loss of tooth

26. To determine the "teeth retention" used:
orthopantomography, computer tomography
biometric method
photometric
myography
electromyography

27. Often there is partial retention of the following teeth:
canines
lateral incisors
central incisors
first premolars
second premolars

28. Treatment of impacted teeth should be:
combined
prothetic
surgical
functional
instrumental

29. Hotz method used for treatment of anomalies:
sizes of teeth
shape of the teeth
the number of teeth
structure of teeth hard tissues
eruption

30. In the mixed dentition period additional "spatial reserves" appears:
during the change of temporal molars
during the change of temporary canines
during the change of milky incisors
after the eruption of permanent incisors
after the eruption of permanent canines

31. The size of the "spatial reserves" in the upper jaw on average:
5 mm
2 mm
8 mm
1 mm
10 mm

32. The size of the "spatial reserves" in the mandible on average:

- 8 mm
- 2 mm
- 5 mm
- 1 mm
- 10 mm

33. The most common reason for retention of the tooth is:

- tooth germ dystopia
- the lack of space in the dental arch
- narrow face
- functional disorders
- teeth crowding

34. The most common reason for "wisdom teeth" retention is:

- tooth germ dystopia, lack of space in the dental arch
- the expansion of dental arcs
- narrow face
- functional disorders
- teeth crowding

35. The most common reason of incomplete retention is:

- lack of space in the dental arch
- the expansion of dental arcs
- narrow face
- functional disorders
- teeth crowding

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