

**UKRAINIAN MINISTRY OF HEALTH
Odessa National Medical University**

**Dentistry Faculty
Department of orthodontics**



APPROVED

Vice-rector for scientific and pedagogical work

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September 1, 2023

**GUIDELINES
For practical lesson
From the academic discipline**

Dentistry Faculty, course 4
Academic discipline - Early orthodontic treatment

Discussed and approved at meetings of the
orthodontics department

Odessa National Medical University

Protocol № 1 from 31.08. 2023 y.

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Odessa – 2023

Practical Lessons

Practical Lesson №1

Topic: Stages of development of the dental and jaw apparatus in the age aspect: prenatal, postnatal. Anatomical and physiological features of the oral cavity and temporo-mandibular joint of a newborn.

Morphological and functional features of a temporary and mixed occlusion. Mixed occlusion, its morphological and functional characteristics.

Goal: To master the stages of development TMJ, anatomical and physiological characteristics TMJ child in different age periods. To master the material about the formation of jaw bones in different age aspects. To be able to name the morpho-functional characteristics of temporary, mixed and permanent bite.

Basic concepts: student of the Faculty of Dentistry must master the educational material on the stages of development of the PDA, the anatomical and physiological

features of the PDA of a child in different age periods. The student must be able to determine the risk factors for the occurrence of dental-jaw anomalies, taking into account the age of the child.

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.

Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 1. Embryonic development of the dento-jaw apparatus
 2. Features of the structure of the oral cavity of the newborn
 3. What are the structural features of the temporomandibular joint in a newbornchild?
 4. The act of sucking a newborn
 5. The act of swallowing a newborn
 6. Terms of formation and eruption of milk teeth

4. Discussion of theoretical issues: The characteristics of the growth and development of a child largely depend on the properties and characteristics received by her from her parents. But there are some patterns of growth and development that are common to most children. According to the nature and intensity of the changes that occur in the body, it is customary to distribute human development over the appropriate periods. Among the numerous classifications of human ontogenetic development, the most common is the modified classification of M.P. Gundobin. A. Intrauterine stage:

the phase of embryonic development (II-III months);

phase of placental development (from III month to birth)

B. extrauterine stage:

neonatal period (up to 3-4 weeks);

period of infancy (from 3-4 weeks to 12 months);

Preschool (senior nursery) period (from 1 year to 3 years);

preschool period (from 3 to 6 years old);

junior school period (from 7 to 11 years old);

senior school period (from 12 to 17-18 years old) .

After birth, a person's life, according to the WHO classification, is

distributed by age as follows: Newborns - 1-10 days Breast age - 10 days - 1

year; Early childhood - 1-3 years; First childhood - 4-7 years Second childhood -

8-12 years old (boys) 8-11 years old (girls) Adolescence -13-16 (boys), 12-15

(girls) Adolescence -17-21 (boys) , 16-20 (maidens) Mature age I period 22-35 (h),

21-35 (w) II period 36-60 (h), 36-55 (w) Summer age- 61-74 (h) , 56-74 (f) Senile

age -75-90 (h and w) Long-livers - 90 years and older.

L.P. Zubkov and F. Ya. Khoroshilkina (1993) to perform the main tasks of

prevention, 10 periods of the formation of the dentoalveolar system are

determined, taking into account its physiological, morphological and functional changes

I intrauterine development of the embryo and fetus (formation of tissues and organs of the dento-maxillofacial system);

II - from birth to 6 months (before the eruption of the first temporary (milk teeth)

III - from 6 months to 3 years (the formation of a temporary bite)

IV - from 3 to 4.5 years (temporary bite is formed) 5

V - from 4.5 to 6 years (the aging period of the temporary bite)

VI - from 6 to 9 years (the first period of mixed bite)

VII - from 9 to 12 years old (second period of mixed bite)

VIII - from 12 to 15 years old (permanent bite)

IX - from 15 to 21 years (completion of the formation of a permanent bite)

X - from 21 to 40 years old (active function of the dentition);

X and - from 40 or more (decreased function of the dentition).

Since the child is constantly growing and developing and at each age stage of his life appears in a special morphological, physiological and psychological quality, a certain need arises to distinguish a number of periods or stages of development in the process of human ontogenesis. Among the stages of ontogenesis, two are important: intrauterine or antenatal development and postnatal, or childhood. The prenatal period is primarily characterized by morphogenesis, which embodies the organogenesis of various body systems, which is manifested by very sharp and significant changes in the shape and structure of organs with extremely intensive and differentiated growth. The intrauterine stage from the moment of conception to birth lasts an average of 270 days. It is customary to distinguish several periods of intrauterine development:

1. germinal, or the actual embryonic period. It begins from the moment of fertilization of the egg and ends with the implantation of a blastocyte formed in the lining of the uterus. Its duration is 1 week.

- 2 Period of implantation. Lasts about 40 hours, that is, about 2 days. These two periods are sometimes combined, since their medical and biological significance is great. At this time, 50-70% of fertilized eggs do not develop, and teratogenic factors, especially those of the strong group, cause pathology incompatible with the survival of the embryo (aplasia and hypoplasia), or form severe malformations due to chromosomal aberrations or mutant genes.

- 3 Embryonic period. It lasts 5-6 weeks. The embryo feeds from the yolk sac. Its most important feature is the establishment and organogenesis of almost all internal organs of the unborn child. Therefore, the action of teratogenic factors (exogenous and endogenous) causes embryopathies, which are the most severe anatomical and dysplastic malformations. The age of the fetus is from 3 to 7 weeks. considered to be a critical period of development .

- 4 Neo-fetal, or embryo-fetal period. Lasts 2 weeks. When the placenta is formed, it coincides with the end of the formation of most organs (except for the central nervous and endocrine systems). This period is important, since the correct formation of the placenta, and therefore the placental circulation, determines the further intensity of fetal growth.

5. Fetal period. Lasts from 9 months. before birth. It is characterized by the fact that the development of the fetus is provided by hemotrophic nutrition. In the fetal period, there are two sub-periods: early and 6 later. The early fetal period (from the

beginning of 9 weeks to the end of 28 weeks) is characterized by intensive growth and tissue differentiation of fetal organs. The action of unfavorable factors, of course, no longer leads to the formation of structural defects, but it can be manifested by a delay in the growth and differentiation (hypoplasia) of organs or a violation of tissue differentiation (dysplasia). Since the immune system is just beginning to form, the response to infection is expressed by tissue proliferative reactions, which lead to cirrhosis and fibrosis. However, the birth of an immature, premature baby is possible. The totality of fetal changes that occur during this period is called the general term - "early fetopathies".

6. The late fetal period begins after 28 weeks of gestation and continues until the onset of labor. The defeat of the fetus in this period no longer affects the processes of organ formation and tissue differentiation, but can cause premature termination of pregnancy with the birth of a small and functionally immature child. If pregnancy persists, fetal malnutrition (intrauterine malnutrition) or general underdevelopment, that is, insufficient weight and body length of the newborn, may occur. The peculiarity of the damaging effect of the infection in this period is the absolutely definite specificity of the damage, that is, the emergence of an already present infectious process with morphological and clinical signs of the disease characteristic of this type of pathogen. Finally, the late fetal period provides the process of deposition of many nutritional components that cannot be introduced to a child in sufficient quantities with breast milk. Thus, the deposition of calcium, iron, copper and vitamin B12 salts can maintain an infant's nutritional balance for several months. In addition, in the last 10-12 weeks of pregnancy, a high degree of maturity and protection of the functions of the vital organs of the fetus from possible violations of oxygenation and trauma during childbirth is achieved, and the mother's immunoglobulins accumulated during transplacental transmission provide a high level of passive immunity. In the last weeks of pregnancy, the maturation of the "surfactant" is also carried out, which ensures the normal function of the lungs and epithelial tissues of the respiratory and digestive tracts. Therefore, the birth of a child, even with a relatively low degree of prematurity, has a very significant effect on the adaptive capabilities and the risk of a wide variety of diseases. The late fetal sub-period, naturally, passes into the intrapartum stage, which is calculated from the day of the appearance of regular labor pains until the moment of cord ligation. At this time, the occurrence of injuries to the central and peripheral nervous system is possible, creates an immediate threat to life. In addition, severe cases of impaired umbilical circulation or breathing are possible. The conditions for maturation and development are of

exceptional importance, since the nutrition of the body, intensively develops, occurs at the expense of the mother. The embryo, at the same time, develops, and the fetus is very sensitive to adverse (teratogenic) factors that can cause death (abortion, stillbirth), malformations from severe, incompatible with life, in lungs developmental anomalies, as well as functional disorders that may appear immediately after birth or later (sometimes years and decades). In the embryo at the age of 12 days, a small depression of the ectoderm is formed between the anterior cerebral bladder and the heart protrusion, which is called a cavity, or oral fossa. Gradually deepening, the oral fossa reaches the blind end of the anterior intestine from which it is separated by the pharyngeal membrane. The pharyngeal membrane consists of the leaves of the ecto- and endoderm adjacent to each other. At the end of the 3rd week, the pharyngeal membrane ruptures and the anterior intestine begins to connect through the oral fossa with the external environment. At about the same time, two small depressions are formed on the sides of the main section of the embryo - the first and second external, branchial or pharyngeal slits, and by the end of the 1st month, the third and fourth branchial slits appear, which are located caudal to the first two. Between the gaps, due to the growth of the mesenchyme, thickenings are formed, which are called the branchial or pharyngeal arches. The first arch, which is located cranially from the first branchial cleft, is called the jaw. The second arch, which is located between the first and second branchial clefts, is called the sublingual. At the end of the first month, the oral fossa is limited by 5 hills, or cusps. One of them (frontal) is located above the oral fossa, two maxillary ones are on the sides of it, and two mandibular ones are slightly lower than the previous ones. These processes are elements of the first branchial arch.

In the process of further development, the mandibular processes approach and grow together along the midline and form the lower jaw and lower lip. The maxillary processes grow together with the mandibular processes in the lateral regions and form the cheeks and lateral regions of the upper jaw and upper lip; however, they do not reach the midline. The end of the frontal process descends into the space between them, from which the nasal processes depart, limit the nasal openings, and the middle part of the frontal process forms the nasal septum followed by the incisor bone and the middle part of the upper lip.

Thus, the entire upper part of the face (forehead, eye areas and nose) is formed from the frontal process; lower - of two mandibular. In the middle part of the face, the lateral sections are formed from the maxillary processes, and the entire middle

section from the frontal process. The formation of the face, the fusion of the processes that form it, ends at the seventh week of intrauterine development. Violation of the fusion processes leads to the occurrence of congenital malformations of the face. The development of the oral cavity is associated with the development of the nasal cavity. At first, both cavities are separated from each other by the primary palate. The primary palate is formed by the medial process, which from the side of the oral cavity merged with the maxillary and lateral nasal processes, which go around the bottom of the olfactory fossa. From the tissue of the primary palate are formed: the middle part of the upper lip within the FILTRUM (philtrum) the middle part of the upper jaw, which contains the incisors and the anterior part of the hard palate (intermaxillary incisor bone) Later, at the beginning of the 2nd month of the prenatal period, the final palate develops. It is formed from lamellar outgrowths on the inner surface of the maxillary processes (they are called palatine processes), which grow towards each other and merge along the midline with each other and with the nasal septum, which descends from above. The posterior parts of the palatine processes, which have no connection with the nasal septum, merge to form the soft palate and uvula. In the process of forming the anterior part of the final palate, a part of the primary palate with the palatine papilla is included in it. The palate is separated from the lip and cheeks by a narrow arcuate groove - the primary labial groove. There is such a groove on the lower jaw. From both furrows, an epithelial plate grows into the depth, which is divided into two: external and internal - dental.

Between them, the mesenchyme grows, which forms protrusions - the alveolar process. Thus, the anterior part of the upper lip and upper alveolar process develops from the primary palate. As a result of the splitting of vestibular plastics, the labial groove deepens, and the vestibule of the oral cavity is formed between the lip and cheek on the one hand and the alveolar process on the other. At first, a very wide mouth opening gradually decreases due to the fusion in its lateral parts of the upper and lower lips. At the same time, the cheeks are formed, in which the sebaceous glands can be stored along the fusion line. The tongue comes from the first three branchial arches. At the end of the 4th week of intrauterine life on the oral surface of the first (jaw arch there are three elevations: in the middle there is an unpaired tubercle and on the sides, there are two lateral ridges. They increase in size and merge to form the tip and body of the tongue. Later, from thickenings to the second and partly to the third and branchial arch develops the root of the tongue with the epiglottis. Draining of the root with other parts of the tongue occurs at the 2nd place of drainage, a groove remains, which is called the

terminal (sulcus tenninalis). The muscles of the tongue develop from myotomes. The masseter muscles themselves are formed from the first 10 branchial arch. Development of salivary All glands of the oral cavity are derivatives of stratified squamous epithelium. Previously, everything is in the embryo: the ocular gland is laid (on the fourth week), then - the submandibular (on the sixth week) and sublingual (on the 8-9th week). glands become noticeable in the mucous membrane much later. The formation of the tonsillar apparatus of the pharynx begins at the 3rd month of embryonal period. After the completion of the formation of soft tissues, the formation of bone structures begins. The bones of the facial skull, which are directly related to the oral cavity, are integumentary (bones of connective tissue origin). The laying of future jaws begins at a relatively early stage in the formation of a face in a human embryo. For the first time, the anlage of the upper jaw appears in the pre-fetus with a length of 20 mm in the form of a skeletal accumulation of mesenchymal cells. One of the first bones of the facial skull to ossify is the upper jaw. By the end of the 2nd month of intrauterine development, when the growth of the maxillary and frontal processes, which form the middle part of the face, is completed, six ossification nuclei appear in their thickness; mineralization begins with them, first of the palatine processes and lateral sections of the upper jaw, and somewhat later of its central area in the form of an independent incisor bone, which only later grows together with the maxillary bones. The upper jaw refers to the bones that are formed on the basis of the connective tissue, bypassing the stage of cartilage. The development of the lower jaw begins with the formation of bone tissue from several points of ossification located in the tissue adjacent to the Meckel's cartilage. The cartilage itself is reduced, giving way to the body of the lower jaw, and develops. The posterior parts of the jaw, its branches, are formed independently of Meckel's cartilage from the corresponding points of ossification. Ossification of the two halves of the lower jaw ends with their fusion, that is, the lower jaw turns into an odd bone after birth until the end of the first year of life. The alveolar process of the jaw develops from the mesenchyme, which limits the tooth bud. The laying of the alveolar process of the lower jaw occurs at the 3rd week of intrauterine development, the upper jaw at the 4th week. The growth of the alveolar process with the body of the lower jaw occurs up to 1 month, on the upper jaw - up to the 3rd month. With the end of the eruption of teeth, the formation of the alveolar edge also ends, and with the end of the formation of the root, the formation of its base. In the thickness of the forming jaws, the rudiments of teeth are formed and developed. The growth and

formation of the jaws are closely related to the development and eruption of teeth. As described above, the face develops as a result of the fusion of different processes. However, their complete connection does not occur - in the 11th site of their confluence, the mesenchyme of one process is separated from the other by a groove - a zone that has a small number of cells. During development, these grooves are smoothed out, due to which the final configuration of the face is formed.

Teeth development.

The following stages of development of temporary permanent teeth are distinguished: 1. The formation and formation of tooth buds.

2. Differentiation of primordial cells.
3. Histogenesis of dental tissues.
4. Mineralization.
5. Teething.

In the seventh week, when the embryo becomes human-like and the term "embryo" is changed to the term "fetus", a thickening appears along the lower and upper edges of the primary oral cavity: stratified squamous epithelium, which grows into the underlying mesenchyme and forms the dental plate. which grows in depth acquires a vertical position. On its edge, bulbous growths of the epithelium appear, which take the form of caps, they are called enamel organs. In each jaw there are 10 such growths, which correspond to the number of the following temporary teeth. The concave part of the caps is made by mesenchyme, which forms The so-called dental papillae. The mesenchyme that limits each such tooth germ, located in the form of a special layer, which is called the dental bag. The cells of the enamel organ in the process of its development acquire various shapes. The epithelium, which forms the inner surface of the cap (internal epithelium), becomes cylindrical. The outer surface of the cap is covered with small cells of the outer epithelium. Located between the outer and inner layers of the epithelium, the cells acquire a stellate appearance and are called the pulp of the enamel organ. But only those cells that are adjacent to the inner layer of the epithelium remain small, round or oblong, forming an intermediate layer of the enamel organ. The cells of the inner and partially intermediate layers of the organ form enamel and get the name adamantoblasts, or ameloblasts. The papilla gives rise to the development of dentin and pulp. Cement and periodontium develop from the mesenchyme of the dental sac. The deepening of the cap of the enamel organ determines the shape of the tooth. This applies not only to the crown, where the enamel epithelium forms the enamel, but also to the tooth root. In the place of

transition of the inner epithelium to the outer, both layers of the epithelium grow inward and form the so-called Hertwig's vagina, which seems to be a form for the formation of dentin, from which the main part of the tooth root is built. Dentin begins to form at the apex of the papilla even when the bud is small; the enamel of the tooth also develops there. Starting in the area of the apex of the papilla, the formation of the tooth gradually spreads to the lateral regions towards the next apex of the root. Even before the onset of dentin deposition outside of the tooth sac, bone tracts of the future 12 tooth cell are formed. The formation of dental crowns (mineralization) begins with the central incisors at the end of the 5th month of embryonic development, and then - the distally located tooth buds. Since the processes of formation of organic matter of teeth can be assessed only on histological preparations, the development of teeth is judged by the processes of mineralization, which begin a short period of time after the formation of the basic substance of enamel and dentin. It is possible to investigate only using X-ray studies. From the moment of birth until the age of 14-18, significant changes occur in the body, which are due to its growth. In turn, these changes determine the anatomical and physiological characteristics of the growing organism. These features are most pronounced in newborns and infants.

FEATURES OF THE STRUCTURE OF THE FACE AND Oral cavity of the NEWBORN

The proportions of the face of a newborn and an adult are different. This is mainly determined by the ratio of the sizes of the cerebral and facial parts of the skull. The chin of the newborn is large and is 1/4 of its body length. The skull of a newborn is

marked by the small size of the facial region compared to the brain. As a result, the facial region hardly protrudes forward. The cerebral part of the skull increases significantly less than the facial one. Another feature of the newborn's skull is the presence of fontanelles. They are located at the intersection of the sutures, where the remains of the connective tissue are preserved. Having them is important as it allows the bones of the skull to move during childbirth. All fontanelles overgrow 2-3 months after birth, except for the frontal (in the second year of life).

Air cavities (maxillary, etc.) in the bones of the skull have not yet developed. Due to the weak development of the muscles, which have not yet begun to function, various muscle tubercles, ridges and lines are poorly expressed. In a newborn, there is a disproportion between the middle and lower part of the face, due to the fact that the height of the bite is provided only by the gingival rollers.

The nose of the newborn is relatively small, the nasal passages are narrow. The

subcutaneous fat layer is located fairly evenly and gives the child's face a characteristic roundness and fullness. In the thickness of the cheeks, there are fatty pads, the so-called Bisha lumps. The fatty layer of the cheeks is an independent bag of the body, which is contained in its own capsule. Both anatomical structures facilitate sucking. The upper lip prevails over the lower lip, forming a lip rung. The lips of the newborn are soft, swollen, proboscis, transversely divided (Pfaundler-Lyushka rollers) with a sucking pad on the upper lip, due to this, the baby tightly covers the nipple.

Deep labio-chin furrow, chin sloping back. Among the factors that contribute to sucking also belongs to the physiological children of retrogenia. At the same time, the distance between the tops of the alveolar processes of the jaws in the sagittal plane reaches 5-7 mm, and the vertical slit is 2.5-2.7 mm, its absence determines the development of a deep bite. The vestibule and floor of the oral cavity are small, transitional folds are poorly expressed. The tongue is big. The upper jaw consists of 2 symmetrical halves, which are combined with a longitudinal seam. During early embryonic development, the intermaxillary bone is located between both parts. Violation of embryonic development at 2 months of pregnancy leads to malformations of the face (crevice defects of the upper lip, alveolar bone, palate). The upper jaw of the newborn is wide and short, and consists mainly of the alveolar ridge, which is located just below the palate. Flat palate with well-defined transverse folds. On average, there are 4-5 pairs of transverse folds in the palate, 2-3 pairs of which extend from the palatine sagittal suture. The transverse folds create a roughness in the mucous membrane and contribute to the retention of the nipple during feeding. Haimor's cavity is only outlined and on the roentgenogram, it looks like an oblong enlightenment. It lies medially relative to the alveolar process. The rudiments of the teeth are located almost under the orbit itself and are separated from it by a thin bone plate. The length of the upper jaw of a newborn reaches 25 mm, width - 32 mm (T.V. Sharova, I. Rogozhnikov, 1991p.).

The lower jaw consists of 2 non-fused halves, which are combined with connective tissue. The alveolar process is better developed than the basal part. This is due to the presence of rudiments of temporary and permanent teeth. F.Ya. Khoroshilkina (1982) provides data according to which the distance from the edge of the gums in a newborn to the lower edge of the jaw is 20.2 mm. The mandibular canal has an almost rectilinear shape and is located close to the edge of the lower jaw. The branch of the lower jaw is almost undeveloped, and the articular process rises above the level of the alveolar process. The angle of the lower jaw averages 135° -

140 (EN Zhulev, 1995) (Fig. 27). Each jaw has 18 follicles, including 10 temporary and 8 permanent teeth (6321 + 1236). The rudiments of the permanent teeth on both jaws are located on the labial side, the rudiments of the permanent teeth lie deeper than the temporary ones on the lingual side on the lower jaw and from the palatine on the upper. The gingival membrane is a double crest-shaped fold of the mucous membrane in the frontal area of the upper and lower jaws (Robin-Mazhit fold). It is rich in small papillary tubercles, blood vessels, as a result of which it is able to thicken. The gingival membrane has a large number of elastic fibers. This anatomical formation can be clearly seen immediately after the baby stops sucking during feeding. The sucking function is well developed in an infant. The mother's nipple irritates the reflexogenic zones of the oral cavity. Excitation is transmitted along the afferent fibers of the n.trigeminus, which innervates the oral cavity, to the sucking center in the medulla oblongata. From the center, an impulse along 18 motor fibers (3 nerves: hypoglossal, triple and facial) leads to muscle contraction (sublingual - excites the muscles of the tongue; triple - chewing, lateral pterygoid and buccal muscles; facial - excites the muscles of the lips). Thus, the muscles that push the lower jaw forward are contracted, due to the contraction of the circular muscle of the oral cavity, the nipple is tightly covered by the lips, the tongue presses the nipple to the palate.

The temporomandibular joint (TMJ) is a complex joint, not only in terms of anatomical structure, but also in function. It belongs to paired, combined, incongruent joints. The temporomandibular joint on both sides (left and right) constitutes a closed circuit, because movement in one joint causes movement in the second. The joint is biaxial, movements in it occur in two directions: horizontal and vertical. The joint consists of the articular head of the lower jaw, the glenoid fossa of the temporal bone, the articular tubercle of the temporal bone, the articular disc, the capsule of the joint (joint capsule) and the articular ligaments. In a newborn child, the structural features of the temporomandibular joint are as follows: - the head of the articular process is almost rounded, has almost the same dimensions (transverse and anteroposterior), its forward inclination is not yet pronounced, the head is covered with a thick layer of fibrous connective tissue; - glenoid fossa, which is a receptacle for the heads of the lower jaw, rounded; it does not have an articular tubercle in front, but posteriorly there is a well-defined articular cone, which limits the movement of the lower jaw towards the middle ear and prevents the pressure of the head on the tympanic part of the middle ear; - the mandibular fossa functions completely, since the lower jaw is displaced distally (the state of physiological babies of retrogeny) - the articular head is located in the

posterior part of the mandibular fossa; - the thickness of the bone of the arch of the fossa is not much more than 2 mm; - the depth of the mandibular fossa is slightly more than 2 mm; - the intra-articular disc is a soft layer of a rounded shape, concave from below, and convex from above, with barely noticeable sweating from the front and back; - the disc consists mainly of collagen fibers; - there are no villi of the synovial membrane of the joint capsule. Absence of articular tubercle, occipital slope of an underdeveloped branch of the lower jaw, physiological retrogenia, a wide flat fossa, an intra-articular disc and an articular cone are formed, create favorable conditions for the movements of the lower jaw in the sagittal plane, which are necessary for the full flow of the sucking function.

5. Topics of reports/abstracts:

1. How many periods of physiological bite increase exist?
2. What externally facial features characterize an orthognathic bite?
3. What signs characterize the orthognathic bite in the vertical plane?
4. What features characterize the orthognathic bite in the transversal plane?
5. What features characterize orthognathic bite in the sagittal plane?

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.
4. L. V. Smagliuk Basic course in orthodontics / L. V. Smagliuk, A. E. Karasyunok, A. M. Bilous. – Poltava: Blitz Style, 2019. – P.173-184.

Additional:

1. Маланчук В.О., Борисенко А.В., Фліс П.С. та ін. Основи стоматології. - Київ: «Медицина», 2009 р.
2. Ravindra Nanda, Flavio Andres Uribe - Atlas of Complex Orthodontics.- Elsevier Health Sciences, 2016, 424 p.
3. Charles J. Burstone, Kwangchul Choy. - The Biomechanical Foundation of Clinical

Orthodontics. – e-book - 2020 г.

4. KALEY ANN.- Evidence-Based Orthodontics.- American Medical Publishers.- 2022, 225p.

5. Bhalajhi SI., et al. “Orthodontics: The art and science”. Sixth edition. Arya (Medi) Publication (2015)

6. William R Proffit., et al. “Patient Interaction in Planning”. In: Contemporary Orthodontics Elsevier Ltd (2019): 138.

7. RamyIshaq. “The Orthodontic Patient: Examination and Diagnosis”. EC DentalScience 18.5 (2019): 975-988

8. 3D Diagnosis and Treatment Planning in Orthodontics: An Atlas for the Clinician 1st Edition ed. by Jean-Marc Retrouvey (Editor), Mohamed-Nur Abdallah (Editor) 2021.

Information resources

1. Державний Експертний Центр МОЗ України
<http://www.dec.gov.ua/index.php/ua/>

2. Laura Mitchell, «An introduction to orthodontics», 2013 – 336 p.

3. Національна наукова медична бібліотека України <http://library.gov.ua/>

4. Національна бібліотека України імені В.І. Вернадського
<http://www.nbuv.gov.ua/>

Practical Lesson №2

Topic: The main etiological factors of the occurrence of dento-alveolar anomalies in childhood. Risk factors and signs of formation of malocclusion at an early age.

Goal: student of the Faculty of Dentistry must master the educational material on the stages of development of the PDA, the anatomical and physiological features of the PDA of a child in different age periods. The student should be able to identify risk factors and causes of dental-jaw anomalies, taking into account the age of the child.

Basic concepts: in the process of mastering the material, the student must apply his knowledge about the features of the anatomy and physiology of the child's MFO, stages and timing of the development of temporary and permanent teeth. To master the topic, the student must use his knowledge and skills of methods of clinical examination of patients .

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.

Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 - Parents of a 5-year-old girl complain about a thumb sucking during sleep. What tactics should the doctor choose?
 - To recommend an ulnar fixator
 - Non-removable device for suppression of bad habit
 - Removable device for suppression of bad habit
 - To talk with a child about harm from thumb suction
 - Medical intervention is unnecessary
 - A 15-year-old boy had finished an orthodontic treatment for crowding 2 degree with braces. The doctor didn't extract teeth during treatment. What is the optimal duration of the retentive period?

- A. before eruption of the third molars
- B. Throughout life
- C. Within 2 years
- D. Within 3 years
- E. Within 4 years

3. A 16-year-old boy complains about the presence of temporary teeth. Objectively in the oral cavity: occlusal relationship is orthognathic, on the upper jaw – all teeth are permanent, on the lower – second molars are temporary. X-ray picture shows the absence of permanent second premolars. What is the doctor's tactics?

- A. Leave temporary molars and conduct dispensary observation
- B. Extract temporary molars and remove first permanent molars on the second premolars place
- C. Extract temporary molars and start the prosthetic treatment
- D. Extract temporary molars
- E. Start remineralization therapy to prevent the resorbtion of the roots of temporary molars.

4. Preventive examination of a 6-year-old girl revealed: occlusal disharmony was not found, between frontal teeth there are tremes and diastemas, canine tubera have no signs of physiological wear out. The central line between incisors doesn't match. What is the doctor's tactics?

- A. To remove unworn tubera of canines
- B. To wait for autoregulation
- C. To disconnect occlusion
- D. To administer jaw massage
- E. To make a screw plate for the upper jaw

6. External examination of a 7-year -old child revealed: thickening of nose bridge, semi-open mouth, dry lips. Mouth corners are peeling. Anamnesis data: the child sleeps with open mouth. Examination of oral cavity revealed no changes. What dispensary group will this child fall into?

- A. The second
- B. -
- C. The third
- D. The first
- E. The fourth

7. The 12, 22 teeth of an 8-year-old child are missing. There is not enough space in dentition for them. X-ray picture shows no tooth germs. The 12 tooth of the child's

father is missing and the 22 tooth is conoid. What is the reason for such pathological changes?

- A. Hereditary adentia
- B. Rickets
- C. Extraction of teeth
- D. Caries
- E. Trauma

8. A child is 2,5-year-old. The parents complain about thumb sucking during sleep. What tactics should the doctor choose?

- A. To recommend an ulnar fixator
- B. Non-removable device for suppression of bad habit
- C. Removable device for suppression of bad habit
- D. To talk with a child about harm from thumb suction
- E. Medical intervention is unnecessary

9. Preventive examination of a 5-year-old girl revealed; tubera of temporary teeth have no signs of physiological wear out, there aren't thremas and diasthems on the upper and lower dentures, straight bite. Which of the listed symptoms is a sign of future crowding?

- A. The absence of thremas and diasthems
- B. The straight bite
- C. The unworn tubera of canines
- D. -
- E. Orthognatic bite.

10. External examination of a 7 year-old-child revealed: the distal surfaces of the temporary second molars are situated in vertical plane in one line, the relationship of canine is right. Is this a symptom of?

- A. The risk factor for distal bite formation
- B. The risk factor for mesial bite formation
- C. Formation of deep bite
- D. Formation of cross bite
- E. Formation of open bite

11. A 5-year-old girl with mouth breathing was referred to an orthodontist. She has a bad habit –thumb sucking. What kind of orthodontic appliance can we use in this situation?

- A. myofunctional preorthodontic trainer
- B. Use Schwartz appliance
- C. Frankel type regulator

D. Standard Schonherrs vestibular screen

E. Rudolphs appliance

12. The examination of a 5-year-old child revealed: the upper jaw is narrowed, there is a gothic palate, the skull is berry shaped with deformation of posture. What is the most probable reason of this deformation?

A. rickets

B. bad habits

C. Nasal respiration disorder

D. Infantile swallowing

13. Preventive examination of a 9-year-old girl revealed a broad bridge of nose, narrow nasal passages, half-opened mouth, problems with lip joining, and elongated lower third of face. There is a vertical gap 4-5 mm large from the 53 to the 64 tooth in the frontal region. Relationship of the first permanent molars I class by Engle's classification. The child pronounces hissing sounds indistinctly. Specify the most likely factor of occlusion deformation:

A. Nasal respiration disorder

B. Tongue sucking

C. There is no correct answer

D. Infantile swallowing

E. Tongue parafunction

14. A 5-year-old girl with crossbite was referred to an orthodontist. Objectively: between frontal teeth there are spaces and diastemas, canine tubercles have no signs of physiological wear out. The central line between incisors doesn't match. What is the doctor's tactics?

F. To remove unworn tubercles of canines

G. To wait for a autoregulation

H. To disconnect occlusion

I. To administer jaw massage

J. To make a screw plate for the upper jaw

15. A 14-year-old girl complains of indistinct pronunciation that developed at the age of 14 after the

acute respiratory viral disease. The examination reveals normal face and normal teeth alignment, occlusal disharmony was not found. Palpation doesn't reveal cleft palate. Uvula doesn't move during pronunciation of sounds, its palpation does not cause gag reflex. What is the reason for indistinct pronunciation of sounds?

A. Paresis of the soft palate and uvula muscles

B. Hypertrophy of lingual tonsil

- C. Deformation of the bite
- D. Adenoid vegetations
- E. Palatal slit

16. Parents of an 8-year-old boy complain about a cosmetic defect, inability to bite off food. The child often suffers from acute viral respiratory infections.

Objectively: chin skewness, mental fold is most evident. The lower lip is everted, superior central incisor lies on it, naso-labial fold is flattened. In the oral cavity: occlusion period is early exfoliation period. The upper jaw is narrowed, there is gothic palate. Frontal teeth have protruded position. Sagittal fissure is 6 mm. In the lateral parts contact of homonymous teeth is present. What is the most probable cause of dentoalveolar deformity?

- A. Pathology of upper airways
- B. Endocrinal diseases
- C. Missing of Caelinskil edge
- D. Untimely sanitation of oral cavity
- E. Gestational toxicosis

18. Patient 12-year-old. He has been undergoing orthodontic treatment for pseudo prognathia with Engle's fixed appliance for 10 months. What is the optimal duration of the retentive period?

- A. 20 months
- B. 12 months
- C. 6 months
- D. 10 months
- E. 3 months

4. Discussion of theoretical issues:

The development of dentoalveolar anomalies and deformities is facilitated by various factors, both local and general, but most often this is a combination of several factors. Depending on the mechanism of action, they are divided into three groups:

- hereditary;
- Acting during intrauterine development (antenatal)
- Active after the birth of the child (postnatal).

In addition to inheritance or certain diseases, a child can inherit features of the development of the skull (type of face, size of jaws and their location, number, size, shape of teeth, etc.) from parents or close relatives. the second group of factors leads to the formation of congenital dentoalveolar anomalies and

malformations, the third - acquired dentoalveolar anomalies. The first two groups of factors are not well understood.

Postnatal factors that contribute to the development of dentoalveolar anomalies and deformities include the following:

1. Improper artificial feeding.
2. Prolonged use of the nipple.
3. Diseases of early childhood - (rickets).
4. Disorders in terms of teething.
5. Adentia.
6. Supernumerary teeth. Impacted teeth.
 1. Absolute or relative (individual) macrodentia.
 2. Microdentia.
 3. Dysfunction of the dentition:
 - Sucking;
 - Closing the lips;
 - Breathing;
 - Chewing;
 - Swallowing;
 - Tongue.
 1. 4. Violation of the myodynamic balance of the muscles surrounding the dentition.
 2. 5. Violation of the constitution:
stoop; lordosis; kyphosis; scoliosis.
 3. Multiple carious destruction of the proximal surfaces of the teeth.
 4. 1. Early loss of temporary or permanent teeth.
 5. 2. Dysfunction or diseases of the TMJ.
 6. 3. Injuries to the maxillofacial region.
 7. 4. Inflammatory and neoplastic diseases of the jaws.
 8. 5. Shortened lips (mainly upper).
 9. 6. Violation of the location and articulation of the tongue.
 10. 7. Anomalies of attachment of soft tissues of the oral cavity (frenum of the lips, tongue, small vestibule of the oral cavity).
 11. Bad habits of sucking on nipples, fingers, lips, tongue, cheeks and foreign objects.
 12. Pathological erasure of hard dental tissues.
 13. Uneven erasure of hard tissues of deciduous teeth.

14. Lack of physiological abrasion of hard tissues of temporary teeth.
15. Incorrect postural reflexes.
16. The presence of adenoid growths.
17. hypertrophy of the palatine tonsils.
18. Diseases of the upper respiratory tract.
19. Surgical interventions in the maxillofacial area.
20. General diseases.
21. Ecological features of the environment.

At this time, the concept of "norm" was based on the concept of "optimal individual norm", that is, the state of morphological, functional and aesthetic balance in the dentition and the facial skeleton as a whole, which is sufficiently guaranteed for a long time, to which it is necessary to strive in the process of orthodontic treatment (Yu.M. Malygin, 1978).

An anomaly (from the Greek. Anomalia) is understood as congenital stable, usually deviations from the normal structure and function characteristic of a given biological species (organ, etc.) do not progress. Deformation is understood as a change in the shape or size of a physical object, which progresses if the action of the force is not terminated. In other words, deformation is progressive, subsequently, changes in the size or shape of the body under the influence of external or internal factors leading to dysfunction.

An abnormal bite is a bite in which there is an abnormal position of individual teeth, deformation of the dental arches or their incorrect ratio.

A pathological bite is considered in which significant morphological abnormalities in the bite lead to persistent violations of function and aesthetics.

V.P. Okushko, in his classification, considers only those types of bad habits that lead to the development of various types of PA and distributes them into 3 groups:

I. Sucking habits (recorded motor reactions):

- 1) the habit of sucking fingers;
- 2) the habit of sucking and biting lips, cheeks, objects;
- 3) the habit of sucking and biting the tongue.

II. Function anomalies (fixed functions that are not flowing correctly):

- 1) violation of the function of chewing; incorrect kovtannya and zwichka vise on the teeth with a tongue;

1) oral type of dichannya.

2) wrong I Yazi kov I articulation me.

1.

2. I. Fixed postotonic reflexes, which determine the incorrect position of body parts at rest:

3. 1) incorrect body posture and poor posture;

4. 2) incorrect position of the lower jaw and tongue at rest. Risk groups for dental disease:

5. 1. Children born to mothers with extragenital pathology (malformations of the cardiovascular system, hypertension, nephropathy, diabetes mellitus, tuberculosis, pregnancy toxicosis, etc.).

6. 2. Children whose parents have a decompensated form of caries (III degree of activity).

3. Babies who were born prematurely. Children who underwent hemolytic disease, pneumonia, purulent-septic diseases, rickets, hypervitaminosis D during birth and during infancy, more than 4 times a year suffer from respiratory diseases

Work with young children begins at the age of 3, determining etiological factors and

preventing the development of dentoalveolar anomalies, this is done by a pediatric dentist and orthodontist.

1. TF Vinogradova proposed to distribute children subject to clinical examination into three groups depending on the number of examinations per year

2. (1 - 2 - 3 times), denoting their ID, PD, PID and five health groups (I3-V3). The composition of health groups was interpreted as follows:

3. Group I - healthy children, rarely get sick.

4. Group II - healthy children with a burdened biological and social history, (often get sick, 4 times a year or more) or have a long-term acute illness, or with the risk of chronic pathology.

Group III - children with chronic diseases or congenital pathology in a state of compensation (with rare and not severe exacerbations, without a pronounced violation of the general condition and well-being), with rare, intercurrent diseases. group - children with chronic diseases and malformations in a state of subcompensation (with frequent exacerbations of the underlying disease, with a violation of the general condition and well-being after an exacerbation) with a prolonged convalescence period after diseases, as well as with pronounced signs of immaturity.

Group I - children suffering from severe chronic diseases, with severe malformations

in the stage of decompensation, that is, with the threat of disability and disabled people.

In choosing the criteria for dividing children into dispensary groups, T.F. Vinogradova does not distinguish risk groups, which are inherently transitional forms between health and compensated pathology. The risk of a dental disease is noted with the letter " P. " NG Snagina (1978) proposed to distribute children with risk factors for dentoalveolar anomalies into two groups, different in the degree of probability of occlusion pathology.

The first group (risk of anomalies - RA) is represented by somoma factors, the presence of which is complicated by a developmental anomaly in a small number of cases, even in the absence of preventive measures:

- 1) anomalies of soft tissue attachment to the alveolar bone;
 - 2) a defect in dental privates when one tooth is removed before the start of root resorption;
 - 3) caries of posterior teeth with destruction of contact surfaces or occlusion surfaces;
 - 4) violation of the timing and sequence of changing temporary teeth; diseases of the organs of vision, which are caused by changes in the shape of the orbit (myopia), often combined with deformation of the lower jaw;
- 1) rickets (in history) and chronic somatic diseases;
 - 2) heredity.

The next group consists of children with such active causes of anomalies, the failure to eliminate which is complicated by developmental deficiencies in most cases. The presence of such factors is called "anomaly transmission" or "readiness state" for the development of an anomaly. Transmitted anomalies are designated as IA and they are as follows:

- 1) violation of the function of chewing;
 - 2) impaired swallowing function;
 - 3) impaired respiratory function;
 - 4) children's bad habits;
- slow erasure of temporary teeth after 4 years, complicated by the block of canine and molar tubercles;
- 1) early, by the time of physiological root resorption, removal (of two or more) adjacent teeth, trauma, surgery and inflammatory diseases that affected the development and growth of jaws and soft tissues;
 - 2) violation of the musculoskeletal system and posture.

There are differences between risk factors and the transmission of anomaly, which is important both for prognosis and for determining the tactics of an orthodontist. At the first, the probability of developing anomalies is low and the

function of the dentist is personal observation with the cooperation of relevant specialists, or without the need for emergency assistance. In the case of others, the development of an anomaly will be mandatory and the dentist's function is to provide active assistance - normalization of impaired functions, elimination of bad habits, teeth grinding, posture correction, preventive dental prosthetics, the appointment of preventive orthodontic appliances, etc.

Since the review of all children and the massive prevention of dentoalveolar anomalies for the orthodontist is difficult. Since the number of orthodontists is 8 times less than that of pediatric dentists, the rest can perform these functions.

Therefore, children with RA and IA are under the supervision of a pediatric dentist, and the orthodontist provides medical examination of children with PA-SHA in the direction of a pediatric dentist, conducts apparatus treatment and preventive dental prosthetics. LB Leporskiy, on the basis of studying the influence of etiological factors on the growth of the face and the formation of bite in children, developed a method for predicting the likelihood of dentoalveolar anomalies. In this case, the following two aspects stand out : Prediction of the likelihood of a dentoalveolar anomaly in a child as a result of the combined action of pathogenetic factors at the time of examination (situational forecast).

1. The prognosis of the development of the dentoalveolar system for a certain time occurs in certain conditions

5. Topics of reports/abstracts:

1. Causes of dental-jaw anomalies during intrauterine development.
2. The causes of dental-jaw anomalies in the first months after birth.
3. The role of artificial feeding in the occurrence of dento-jaw deformities.
4. Risk factors for dental-jaw anomalies in children during milk bite
5. Risk factors for the occurrence of dento-jaw anomalies in children during the mixed bite
6. The role of mouth breathing on the formation of dental-jaw anomalies and deformities .

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.

4. L. V. Smagliuk Basic course in orthodontics / L. V. Smagliuk, A. E. Karasyunok, A. M. Bilous. – Poltava: Blitz Style, 2019. – P.173-184.

Additional:

1. Маланчук В.О., Борисенко А.В., Фліс П.С. та ін. Основи стоматології. - Київ: «Медицина», 2009 р.
2. Ravindra Nanda, Flavio Andres Uribe - Atlas of Complex Orthodontics.- Elsevier Health Sciences, 2016, 424 p.
3. Charles J. Burstone, Kwangchul Choy. - The Biomechanical Foundation of Clinical Orthodontics. – e-book - 2020 г.
4. KALEY ANN.- Evidence-Based Orthodontics.- American Medical Publishers.- 2022, 225p.
5. Bhalajhi SI., et al. “Orthodontics: The art and science”. Sixth edition. Arya (Medi) Publication (2015)
6. William R Proffit., et al. “Patient Interaction in Planning”. In: Contemporary Orthodontics Elsevier Ltd (2019): 138.
7. RamyIshaq. “The Orthodontic Patient: Examination and Diagnosis”. EC DentalScience 18.5 (2019): 975-988
8. 3D Diagnosis and Treatment Planning in Orthodontics: An Atlas for the Clinician 1st Edition ed. by Jean-Marc Retrouvey (Editor), Mohamed-Nur Abdallah (Editor) 2021.

Information resources

1. Державний Експертний Центр МОЗ України <http://www.dec.gov.ua/index.php/ua/>
2. Laura Mitchell, «An introduction to orthodontics», 2013 – 336 p.
3. Національна наукова медична бібліотека України <http://library.gov.ua/>
4. Національна бібліотека України імені В.І. Вернадського <http://www.nbuv.gov.ua/>

Practical Lesson №3

Topic: Psychological training. Peculiarities of working with children. Adaptation to orthodontics devices.

Goal: Enhancing the knowledge of students regarding the psychological preparation of a child to orthodontic manipulations. Peculiarities of orthodontic treatment of children with adaptation of children with various syndromes (Down's syndrome, cerebral palsy, etc.) to orthodontics devices

Basic concepts: psychological support and contact with the child during orthodontic treatment, features of managing children with different syndromes, adaptation of children to orthodontic devices.

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.

Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 - Phases of adaptation
 - levels of adaptation
 - characteristic of the physiological level of adaptation
 - characteristic of the psychological level of adaptation
 - characteristics of the social level of adaptation
 - the role of the orthodontist in adapting the patient to orthodontic equipment

4. Discussion of theoretical issues:

Adaptation in orthodontics is the process of getting used to orthodontic devices or children's prostheses is especially important in early treatment. The issue of adaptation to lamellar prostheses has been raised for a long time. Courland

V. Yu. in 1939 identified three phases of adaptation, which are related to mechanisms cortical inhibition:

- Irritation;
- Partial braking
- Full braking.

The irritation phase manifests itself in the first days of installing the device and characterized by increased salivation in some patients there is a vomiting reflex, impaired diction and discomfort in the amount free space for the tongue.

Partial inhibition appears in the first few days, decreases salivation and partially improved diction.

Complete braking occurs approximately from the 5th to the 33rd day of using the device, in this phase, full habituation takes place - the child feels comfortable and not perceives the device as a foreign body.

I.S. Rubinov studied the second theory, that the process of adaptation does not depend on cortical inhibition, but depends on acquired new reflexes that replace existing old ones.

Psychologists distinguish three levels of adaptation:

- physiological (biological);
- psychological;
- social.

These levels are closely interconnected and influence each other. On for each of these levels, the child needs support from the orthodontist and the child's attitude to treatment and his motivation, experiences and perception.

Objective is related to physiological processes, not conveniences with which a child meets during orthodontic treatment.

The physiological or biological level is characterized by the body's response to the stimulus, in this case to the orthodontic apparatus. The less intensity of pain sensations, the faster the process of getting used to this level. Usually in children with chronic congenital or acquired disease, the adaptation process occurs much later. Exactly the same as and children with syndromes need more time for adaptation and support from others. The child's parents have an important influence on the psychological level of adaptation orthodontist. The doctor needs to convey information to the child in an accessible manner about the treatment process, care for the device, recommendations for the regimen use, motivate her. It is necessary not to forget that in this case ours

the patient is not the child's parents, but the child himself, and pay enough attention to it and support - then adaptation will be easy and fast.

Social level of adaptation. Bullying is common in kindergartens and schools more often, which develops complexes in children and makes them withdrawn. It is important here supporting parents, explaining to the child how to behave correctly in such situations and in some cases the help of a psychologist. disease, the adaptation process occurs much later. Exactly the same as and children with syndromes need more time for adaptation and support from others. The child's parents have an important influence on the psychological level of adaptation orthodontist. The doctor needs to convey information to the child in an accessible manner about the treatment process, care for the device, recommendations for the regimen use, motivate her. It is necessary not to forget that in this case ours the patient is not the child's parents, but the child himself, and pay enough attention to it and support - then adaptation will be easy and fast.

Social level of adaptation. Bullying is common in kindergartens and schools more often, which develops complexes in children and makes them withdrawn. It is important here supporting parents, explaining to the child how to behave correctly in such situations and in some cases the help of a psychologist.

It should be noted that the social environment has a great influence on the child's condition.

Therefore, it is often possible to observe the appearance of a bad habit in children aged 6-8 years, because during this period they go through many changes, the transition from kindergarten to school, change surrounding children, perhaps bullying by classmates - all this is active affects the child's psychological state. Children with congenital and psychiatric syndromes need special attention diseases and orphans.

Each of them needs more time adaptation, possibly more visits for getting used to and finding contact with a doctor, in some cases the help of a psychologist.

5. Topics of reports/abstracts:

1. In what period after installation of the orthodontic apparatus does it appear irritation phase?

A. the first day

B. the first week

C. The first month

2. What is the irritation phase characterized by?

- A. increased salivation, impaired diction and discomfort
- B. reduction of salivation and partial improvement of diction.
- C. restoration of the normal amount of saliva secretion and normalization diction

3. What is the phase of partial braking characterized by?

- A. increased salivation, impaired diction and discomfort
- B. reduction of salivation and partial improvement of diction.
- C. restoration of the normal amount of saliva secretion and normalization diction

4. What is the phase of full braking characterized by?

- A. increased salivation, impaired diction and discomfort
- B. reduction of salivation and partial improvement of diction.
- C. restoration of the normal amount of saliva secretion and normalization diction

5. How many levels of adaptation do psychologists distinguish?

- A. 3
- B. 5
- C. 4

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.
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7. Ramy Ishaq. “The Orthodontic Patient: Examination and Diagnosis”. EC Dental Science 18.5 (2019): 975-988
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4. Національна бібліотека України імені В.І. Вернадського <http://www.nbuv.gov.ua/>

Practical Lesson №4

Topic: Methods of orthodontic patients treatment. Indications for orthodontic treatment of children. Preventive focus and complexity of orthodontic treatment. The possibility of self-regulation of maxillofacial anomalies. The choice of treatment methods according age and the severity of abnormalities. Dispensary groups. Functional orthodontics.

Goal: student of the Faculty of Dentistry must clearly master the basic methods used in the treatment of dental-maxillofacial anomalies and deformities, know the biological, functional method. To be able to carry out preventive measures to prevent the occurrence of orthodontic pathology and draw up a plan for orthodontic treatment.

Basic concepts: in the process of mastering the material, the student must apply his knowledge on the periods of development of the ABA histological structure of hard tissues of temporary and permanent teeth, anatomical signs of different groups of temporary and permanent teeth. To be able to determine the group belonging of temporary and permanent teeth.

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.
Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**

1. A teenager applied to an orthodontist complaining about tooth malposition. Objectively: the face is without peculiarities. Occlusion of permanent teeth is present. There are no abnormalities of jaw correlation in three planes. The 23 tooth is vestibularly over the occlusive plane; the space in the dental arch is less than $\frac{1}{3}$ of crown size. How is it possible to make room for the malpositioned 23 tooth?

- A. To remove the 24 tooth
- B. To enlarge sagittal jaw dimensions

C. To enlarge vertical dimensions

D. To remove the 23 tooth

E. To enlarge transversal jaw dimensions

2. A 12-years-old male patient consulted an orthodontist about disposition of canine. Objectively: the face is symmetric and proportional. In the oral cavity: permanent occlusion, occlusal relationship is orthognathic in the lateral parts, the 13 tooth is located off dentition on the palate, biometric measurements show that the width of the 13 tooth is 11,4 mm, the distance between the 12 and 14 teeth is 4,6 mm, the width of the 14 tooth is 7,6 mm. Suggest the treatment plan:

A. Extract the 14 tooth and move the 13 tooth into its place

B. Extraction of the 14 tooth

C. Move the 13 tooth into its place without bite opening

D. Open the bite and move the 13 tooth into its place

E. No treatment is required

3. Examination of a 13-years-old patient allowed to make a final diagnosis: vestibular position of the 13 and 23 teeth with the total space deficit, narrowing of maxillary dental arch, tortoposition of the 12 and 22 teeth. To eliminate this pathology it was suggested to widen the dental arch and to extract some teeth. What teeth have orthodontic indication for their extraction?

A. First premolars

B. Second premolars

C. First molars

D. Canines

E. Second incisors

4. A 12-years-old patient presents with abnormal position of canine on the upper jaw. The 13 tooth is in the vestibular position, above the occlusal plane. Space between the 14 and the 12 tooth is 6,5 mm. Choose a rational treatment method:

A. Surgical and instrumental

B. Instrumental

C. Surgical and physiotherapeutic

D. Surgical and myogymnastics

E. Instrumental and myogymnastic

5. A 17-years-old patient consulted an orthodontist about improper position of an upper canine. Objectively: permanent occlusion, class I Angles relationship of the first molars, the 13 tooth has vestibular position above the occlusal line, there is a 6,5 mm gap between the 14 and 12 teeth. What period of orthodontic treatment will reduce the time of lidase phonophoresis therapy?

- A. Active period
- B. Preparatory period
- C. Retention period
- D. Passive period
- E. -

6. Parents of a 12-years-old child consulted an orthodontist about improper position of the child's upper teeth. Objectively: the face is narrow, elongated; the developing occlusion is present (temporary second molars). The 13 and 23 teeth are located beyond the dental arch, they deviate to the lips above the occlusal plane, there is a 2,5 mm gap between the 12 and 14 teeth, and a 1,5 mm gap between the 22 and 24 ones, 45 degree rotation the 33 and 43 teeth is present. Choose the most rational method of treatment:

- A. Extraction of the premolars and relocation of the canines
- B. Extraction of temporary premolars and expansion of dental arches
- C. Expansion of dental arches in the region of canine apices
- D. Compact osteotomy and expansion of dental arches
- E. All the answers are wrong

7. A child is 7 years old. He has early transitional dentition. There is overcrowding of the lower front teeth: the 42 and 32 teeth erupted orally with a complete lack of space. Make a plan of treatment:

- A. Serial consecutive extraction by Hotz's method
- B. Extraction of the 41 and 31 teeth
- C. Extraction of the 84 and 74 teeth
- D. Extraction of the 83 and 73 teeth
- E. Extraction of the 42 and 32 teeth

8. Parents with a child 12- years -old complains about the absence of tooth on the upper jaw. In anamnesis: temporary tooth was removed at the age of 4 as a result of injury. Objectively: bite of permanent teeth, the 21 tooth is absent. The gap between 11 and 22 is 4 mm. On the X-ray: 21 is located at an angle of 45 degrees to 11. Choose a rational method of treatment:

- A. Combination treatment method [surgical and apparatus]
- B. Surgical
- C. Physiotherapy
- D. Orthopedic
- E. Hardware

9. A 4-years-old child got a face trauma 2 hours ago. A dentist on duty made a

diagnosis: intrusive luxation of the 61 tooth. What is the tactics of choice?

- A. Extraction of the 61 tooth
- B. Observation
- C. Reposition of the 61 tooth
- D. Splinting of the 61 tooth
- E. Removal of pulp of the 61 tooth

10. Parents of 4-years-old child complains about the defect of the language, the wrong pronunciation of the sound "R". Objectively: the tongue is limited to movements, when pushed forward pushes downward, the lower edge of the tongue bristle is attached to the front of the streaks of the submandibular salivary glands.

The nipple is thin, clear. Specify the terms of surgery:

- A. After the diagnosis is established
- B. After the end of growth of maxillo-facial hips
- C. -
- D. After the formation of a permanent bite
- E. After eruption of permanent molars

4. Discussion of theoretical issues:

Methods for the treatment of dentoalveolar anomalies are divided into:

- Preventive
- Hardware
- Combined (physiotherapy and surgical methods of intensification)
- Surgical
- Prosthetic

In order to correct malocclusion or anomalies in the position of individual teeth, orthodontists mainly use the apparatus method of treatment. The main method is instrumental, all the rest are auxiliary. Orthodontic appliances are a source of force, applied to the tooth to be moved, and cause a certain tension in the periodontal tissues. There is a corresponding restructuring in all components of the periodontium - tissue of the alveoli, periodontal tissue, tooth cement and gums. Treatment is carried out with the help of special standard devices or devices made by a dental technician, called ortho-dontic devices.

Preventive treatments:

- Basic principles of prevention of dentoalveolar anomalies and deformities in children
- - ensuring the optimal course of pregnancy;
- - ensuring the correct technique of breastfeeding the child, timely introduction of bait, correct artificial feeding using an elastic nipple with a

small opening, the transition to feeding from a spoon, cup, as well as the consumption of solid food from 10-11 months;

- prevention of childhood and infectious diseases;
- elimination of bad habits by conducting sanitary educational work among parents, educators and children;
- normalization of the functions of sucking, swallowing, chewing, breathing;

sanitation of the oral cavity, prevention of caries and its complications;

- elimination of anomalies of the frenulum of the lips and tongue, deepening of the bottom of the oral cavity;
- prevention of inflammatory processes in the maxillofacial region;
- timely removal of milk teeth;
- identification and clinical examination of children with early signs of dentoalveolar anomalies and deformities.

Preventive measures should be taken at all times during the growth and development of the child apparatus first method of treatment

The apparatus method of treatment consists in continuous, fragmentary or alternating pressure on the teeth, alveolar processes and jaws with the help of special mechanical devices called orthodontic appliances . The devices are activated by sliding screws, a spring wire, rubber rings, ligatures or efforts of the chewing or facial muscles, as well as changes in the movements of the lower jaw using occlusal or biting pads, inclined planes, labial pads, cheek shields.

Continuous acting force - pressure on the tooth without a resting phase, as a result of which hyalinization occurs. The forces must be weak. An alternating force is characteristic of the regular onset of the resting phase, due to the fact that the equipment is not worn for a certain time during the day, but bone resorption is currently continuing. Osteoblast activity does not stop after the end of the pressure phase.

The choice of orthodontic treatment is carried out taking into account the patient's age and the severity of the anomaly. During the period of milk and early bite, removable equipment is shown. In case of late changeable and permanent occlusion, it is also possible to use non-removable mechanical devices.

Orthodontic treatment stimulation methods

Stimulation of osteoreparation processes is a set of measures aimed at resorption of bone tissue of the alveolar process and the formation of new layers of bone in places that are not subject to pressure.

The mechanisms of stimulation of the processes of osteoreparation include:

drug therapy, physiotherapy (massage, vacuum, use of various types of currents, magnetic and ultrasonic fields), surgical interventions in the area of the teeth being moved.

Surgical treatments

can be used both independently and in combination with the instrumental method for the treatment of tooth-jaw pathology. The main factor accelerating the remodeling of bone tissue is the intensity of enzymatic processes that develop after bone damage.

Surgical methods can be divided into the following groups:

- a) on soft tissues:

- - plastic bridle

- - move the city of attachment of the bridle

- - plastic in the area of the mucous membrane

- - deepening of the vestibule of the oral cavity

- - alignment of the supramental skin fold b) on the teeth and dentition:

- - exposure of the crown of a ratinated tooth

- The separation of I the teeth in,

- removal of supernumerary and individual complete teeth;

c) on the alveolar bone

- compactosteotomy d) on the jaws:

- osteotomy

- osteoctomy

2) a prosthetic treatment method.

If it is impossible to correct dentoalveolar pathology by orthodontic methods, prosthetics are sometimes used according to specific indications in accordance with

age and pathology .

Clinical examination in orthodontics

Clinical examination - the system of work of medical institutions in our country ensures the prevention of diseases, their early detection and treatment with systematic observation of patients. It is carried out by district children's dental clinics and in particular by an orthodontist, who is allocated a preventive day a week. Held in organized childcare facilities.

The first stage is registration of all children. Age, gender and general health are taken into account.

The second stage is a specialized examination of each child.

The third stage is their distribution among dispensary groups.

The fourth stage is monitoring patients, sanitizing the oral cavity, conducting hygiene lessons and other mass preventive measures.

The fifth stage is the study of the effectiveness of orthodontic medical examination.

The complex of therapeutic and prophylactic measures planned during the examination of the child is registered in the medical examination card, after which the children are assigned to dispensary groups. Osadchy identified 4 dispensary groups:

The 1st group includes children with correct closure of the lips, normal functioning of the dentoalveolar apparatus and correct bite. These are practically healthy children, they are examined once a year.

The 2nd group includes children with risk factors, that is, with functional disorders of breathing, swallowing, speech, chewing, facial expressions, bad habits, having shortened frenulum of the lips, and a shallow vestibule of the mouth. In such children, it is necessary to eliminate the causes of deviations and create favorable conditions for the normal growth of the jaws and the formation of the bite .

Sanitation of the oral cavity is carried out, methods of combating bad habits, therapeutic myogymnastics, consultation of specialists are recommended: ENT, orthopedist, pediatrician, etc. such children should be supervised by parents and educators, medical personnel of the children's institution. An orthodontist's review is half a year. The 3rd group includes children with mild morphological changes and anomalies in the position of teeth or their groups, changes in the shape of dental arches, malocclusion caused by functional changes. To assist such children, measures are taken to eliminate the cause of the development of violations, including the use of orthodontic appliances. After treatment, observation is carried out once a year.

Up to 4 dispensary groups include children with pronounced changes in the dentition. Impaired breathing, swallowing, speech, biting and chewing food. Such children need specialized help in complex therapeutic measures, leading to the normal function of the dentition and the whole organism. The choice of orthodontic apparatus for the treatment of various dentoalveolar anomalies is carried out taking into account the patient's age and the severity of the anomaly. During the period of milk and early bite, mainly removable equipment is shown. With a late changeable and permanent bite, you can also use non-removable mechanical devices, especially with pronounced anomalies.

5. Topics of reports/abstracts:

1. What dispensary groups do you know?

2. What is the prevention of HSPA & D?
3. What groups can be divided into orthodontic treatment methods?

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.
4. L. V. Smagliuk Basic course in orthodontics / L. V. Smagliuk, A. E. Karasyunok, A. M. Bilous. – Poltava: Blitz Style, 2019. – P.173-184.

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4. KALEY ANN.- Evidence-Based Orthodontics.- American Medical Publishers.- 2022, 225p.
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6. William R Proffit., et al. “Patient Interaction in Planning”. In: Contemporary Orthodontics Elsevier Ltd (2019): 138.
7. RamyIshaq. “The Orthodontic Patient: Examination and Diagnosis”. EC DentalScience 18.5 (2019): 975-988
8. 3D Diagnosis and Treatment Planning in Orthodontics: An Atlas for the Clinician 1st Edition ed. by Jean-Marc Retrouvey (Editor), Mohamed-Nur Abdallah (Editor) 2021.

Information resources

1. Державний Експертний Центр МОЗ України
<http://www.dec.gov.ua/index.php/ua/>
2. Laura Mitchell, «An introduction to orthodontics», 2013 – 336 p.
3. Національна наукова медична бібліотека України <http://library.gov.ua/>
4. Національна бібліотека України імені В.І. Вернадського
<http://www.nbuv.gov.ua/>

Practical Lesson №5

Topic: Instrumental method. General characteristics of the method. Indications for use in different ages. Classifications of orthodontic devices.

Goal: student of the Faculty of Dentistry must clearly learn the principles and become familiar with the mechanism of action of active (mechanical) orthodontic appliances, indications for their use. Explain the age-related features of the structure of hard tissues of teeth, periodontium, alveolar processes, jaw bones, TMJ in children of different veins. The student should be able to form a final diagnosis of an orthodontic patient.

Basic concepts: in the process of mastering the material, the student must apply his knowledge about the features of the anatomy and physiology of the child's maxillary area, the stages and timing of the development of temporary and permanent teeth, the morpho-functional characteristics of the temporary, removable and permanent bite, physiological and pathological types of bite, clinical methods of examining children with dental-maxillofacial anomalies and deformities., filling out the medical history, forming a preliminary diagnosis, the role of auxiliary research methods in the differential diagnosis of dental-maxillofacial anomalies.

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.

Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 1. An 8-year-old child is found to have convex facile profile, forced closing of lips, sagittal gap of 7 mm. Eschler-Bittner's test produces some face improvement. This abnormality can be eliminated by means of Frankel's I type regulator. What is the mechanism of action of this device?
 1. Normalization of labial, buccal and lingual pressure as well as of mandible position
 2. Normalization of upper front teeth position by means of a vestibular bar
 3. Maxillary expansion by means of a screw

4. Inhibition of maxilla growth in the sagittal direction
5. Normalization of mandible position and growth by means of intermandibular traction
2. The therapeutic efficacy of which strength is recommended in orthodontics?
 - A. 17-20 g / cm²
 - B. 30-45 g / cm²
 - C. 27-40 g / cm²
 - D. 65 g / cm²
 - E. 3-5 g / cm²
3. Patient 12 -years -old was treated in an orthodontist for a false progeny for 10 months using a permanent Engle's arch. What is the optimal duration of the retention period?
 - A. 20 months
 - B. 6 months
 - C. 12 months
 - D. 3 months
 - E. 10 months
4. At examination of children at school, dentist-orthodontic found in some of them the tension of the colonic muscle of the mouth. Which of the following appliances can be used for gymnastics of circular muscle?
 - A. Dass's appliance
 - B. Engl's appliance
 - C. Bryukl's appliance
 - D. Frenkel function controller
 - E. Andresen-Goipl's appliance
5. The orthodontist register is 3.5- years-old child with the thumb sucking and "infantile" type of swallowing. During the examination: bite of temporary teeth; cusps in direct contact. Which prophylactic device is most appropriate in this case?
 - A. Vestibula-oral Kraus's appliance
 - B. Frenkel's functionall appliance
 - C. The standart vestibular Schoncher's appliance
 - D. Bionator Jansen
 - E. Appliance with Rudolf's hinges
6. A 6-years-old child presenting in an orthodontist on a dispensary account is assigned a complex of myogymnastric exercises with a lip balancer. What muscles carries out the effect of prescribed treatment
 - A. The circular muscle of the mouth

- B. The muscles that move the lower jaw aside
 - C. Harsh muscle
 - D. Muscles that raise the lower jaw
 - E. Muscles that open the lower jaw
7. Child 5- years –old has malocclusion and treat with using an appliance with a vestibular bumper. What effects does the vestibular bumper have?
- A. Neutralizes the pressure of the circular muscle of the mouth
 - B. Normalizes swallowing function
 - C. Changes the position of the tongue
 - D. Changes the inclination of the upper frontal teeth
 - E. Stimulates the growth of the lateral areas of the jaw
8. Which elements do the Functionally-guiding appliance includes?:
- A. Sloping plane
 - B. Rubber pull
 - C. Protective shields
 - D. Screws and springs
 - E. Omega-shaped loop
9. The child 4- years- old with oral respiration came to orthodontic. In anamnesis, adenotomy has been postponed. During the examination: bite of temporary teeth; upper incisors cover the lower one correctly; distal surfaces of upper and lower temporary molars are located in one vertical plane. Which prophylactic device is most appropriate for eliminating the oral breathing?
- A. The standard vestibular Schoncher's appliance
 - B. Appliance with Rudolf's loops
 - C. Vestibular-oral Kraus appliance
 - D. Frenkel's functions appliance
 - E. Andresen-Goipl's appliance
10. What is the function of the Coffin's spring?
- A. To expand the upper dentition
 - B. To narrow the upper dentition
 - C. For the fixation of orthodontic equipment
 - D. For the narrowing of the lower dentition
 - E. Spring Coffin's springs not used in orthodontics
11. Girl 13- years-old came to orthodontic with complains about the wrong position of teeth. It is necessary to apply the vestibular arch. What is the acting of it?
- A. Mechanically active

- B. Combined action
- C. Preventive action
- D. Functionally active
- E. Functionally directing

12. The child with a bad habit - biting lower lip came to orthodontic. Which device can you choose to treat a bad habit?

- A. The vestibular shield
- B. Katz's appliance
- C. Bruckle's appliance
- D. Appliance with loops of Rudolf
- E. -

13. After preventive orthodontic examination of 9-years-old child was diagnosed mesial occlusion. The treatment of this pathology involves mechanic appliance.

What working element is applied to correct this pathology?

- A. Screw or spring
- B. Elastics and buccal shields
- C. Occlusal rest seats
- D. Inclined plane
- E. Screw and bite plate

4. Discussion of theoretical issues:

Apparatus method of treatment

Orthodontic instrumental treatment of dentoalveolar anomalies and deformities includes:

- expansion of dental arches;
- narrowing of dental arches;
- stimulation or growth retardation of the apical base of the jaws
- growth retardation of the entire jaw or a separate area;
- change in the position of incorrectly positioned teeth;
- change in the position of the lower jaw;
- correction of bite height;
- restoration of the impaired function.

Functionally-active orthodontic appliances:

The therapeutic effect is based on a directed change in the dynamic balance between the facial muscles, continuously acts on the dentition in the lingual direction and the tongue, which counteracts this pressure in the vestibular direction.

The devices are used in the period of milk and at the beginning of the first

period of mixed bite.

The vestibular plates of Kerbitz, Schoncher, Kraus, Muehlemann, Dass, Hinz are designed to normalize the function of facial muscles. Protect the dentition from the pressure of the lips, cheeks, fingers. Devices with a tongue grate normalize tongue position and prevent excessive pressure on the front teeth. Structural elements - cheek shields, lip pads, vestibular dumbbells, bounding bars for the tongue.

Dr. Hintz's vestibular plates are a preventive device for early orthodontic treatment at the age of 3-6 years. With the elimination of bad habits, they prevent the development of soft tissue dysfunctions that cause deformation of the dentition in the milk bite. The vestibular plate is standard, with a bead, with a peak, with a wire shutter .

Pre-orthodontic Trainer - corrects myofunctional bad habits and straightens the teeth that erupt.

The devices proposed by Frenkel - function regulators - are a removable two-jaw apparatus, the main parts of which are side shields and vestibular pilots. Parts of the apparatus are bound by metal arcs made of elastic wire. Three types of apparatus - the first and the second for the treatment of distal occlusion, the third - for the treatment of medial occlusion .

Functional-directional orthodontic appliances

The devices are inclined planes, cushions of the platform, occlusal overlays that move the teeth or the entire lower jaw in the sagittal, transversal or vertical direction.

Fixed devices - Katz crown, Schwarz crown

Removable apparatuses - **Bynin's mouthpiece, Schwarz's plate with an inclined plane, Schwarz's plate with a bite pad or occlusal pads, Katz's plate.** The founder is A.Ya. Katz - believed that the strength of functionally acting apparatus is regulated by periodontal receptors. It can act until a certain point, if it becomes excessive, then pain occurs, and muscle contraction is weakened or stopped. The source of strength is the contracture of the masticatory muscles during the period of contact of the teeth with the inclined plane, the cusp pad or occlusal pads. The dentition is separated, the devices operate intermittently.

Mechanical impact devices

They are characterized by the fact that the strength of their action lies in the design of the apparatus itself and does not depend on the contractile ability of the masticatory muscles.

The source of the force is the active part of the apparatus: elasticity of the

arc, springs, elasticity of rubber traction and ligatures, force developed by the screw.

The intensity of the apparatus is regulated by the doctor, using their active part. The force of pressure or thrust must be individual.

1) Non-removable mechanical-acting devices. Engh proposed vestibular circular arches - stationary, expansive, sliding. These devices were further developed in the arc devices of Herbst, Mershon Simon, Korkhaus-Linde, Stanton. Fixation devices with crowns or rings on non-prepared permanent premolar or molars after orthodontic separation. Angle's devices are called universal, since they can be used to treat various anomalies of the dentoalveolar apparatus.

- **Stationary Angle arch** - used for the vestibular movement of incorrectly positioned front teeth: tying teeth to the arch with ligatures, they move them. The arch is activated by pidgvinchuvannyam nuts and moving the arch forward.

- **Angle's expansive arch** - used to expand the dentition. Depending on the area in which the dentition needs to be expanded, the arch is set accordingly.

- **Angle sliding arch** - used to tilt the front teeth to the palatine or lingual side. The arch is turned into a sliding one: the nuts are removed, and in the area of the canines, medially open hooks are soldered to the arch. After the arch is inserted into the tubes, the hooks are put on rubber rings and secured to the rear end of the tube. The rubber rod displaces the arch distally.

- **Apparatus Ainsworth** - used for uneven expansion of the dentition and elimination of the close location of the incisors.

- **Simon's apparatus** - used to expand the dental arch in the area of perolaria and molars, returning molars around the axis.

- Iershon's apparatus - used to expand the dental arch.

Apparatus Pozdnyakova - used to remove teeth from the palatal position. Apparatus consist of crowns fixed to the first permanent molar and palatine on the tooth. A bar from the vestibular side is soldered to the crown on the molar, the second end of which rests on the tooth, which is standing. Hooks are soldered to the crown of the palatine tooth. The apparatus brings into force an elastic ligature applied to the hooks of the moved tooth and the bar.

- **The Eisenberg-Herbst apparatus** is used to move the upper frontal teeth orally, change their inclination and shorten the dental arch in the presence of gaps between the frontal teeth.

- **Vasilenko apparatus** - used to rotate teeth.

1) Removable mechanical impact devices. These include lamellar devices in combination with screws, springs, vestibular arches. Removable devices operate

intermittently, with less force.

- **Kurylenko apparatus** - for moving teeth in the mesiodistal direction.
- **Doroshenko apparatus and Roberts apparatus** - for teeth distalization.

Combined action apparatus

They are used for combined pathology, make up 75% of all removable equipment. Functional devices supplemented with active elements - screws, springs, which are used to accelerate the movement of individual teeth .

The Andersen-Goipl activator helped to restore the function of closing the mouth,

breathing, chewing, swallowing, activated the chewing muscles and stimulated growth in the mandibular joints.

- **Open Klammt activator, Bimler bite shaper, Balters bionator.**

These devices consist of upper and lower plates connected by a base material. A vestibular arch, springs, a screw can be added to them. The action of the apparatus is based on the reduction of the chewing and mimic muscles and the force of action of mechanical elements. Activators were used mainly at night. The disadvantage of activators is slow action, excludes the possibility of using activators in boys and adults .

Khurgin apparatus is used to treat prognathia and deep bite in the presence of a narrowing of the upper dentition.

- **Apparatus Bruckle** - used for palatal inclination of the anterior teeth of the upper jaw and forced progeny.

- **Bionator Balters.** There are three types of devices:

- the first - to eliminate the narrowing of the dentition, protrusion of the front teeth and deep bite;
- the second - to eliminate open bite;
- the third - to eliminate the mesial occlusion.

Three stages of orthodontic treatment:

And - the stage of displacement of the teeth from its original position;

II - stage is characterized simultaneously by the processes of resorption of the alveoli in places of pressure and the formation of new bone in places of opposite pressure; (This stage is the longest and depends on the patient's psycho-emotional state, the density of the bone structure of the alveoli, the nature of the applied pressure of the orthodontic apparatus). At the second stage, less force is needed to move the same tooth, since the trigger mechanisms have already passed at the first stage, the processes of resorption and new formation of bone tissue of the alveolar process must be maintained at the same level.

In case of insufficient effort, movement will not occur, with excessive effort, the regeneration processes will lag behind. Stimulation of the regeneration processes should be aimed at restoring the bone structure in the places of the alveolar depression on the side of the opposite pressure.

III - the stage of the fixed results of the movement of teeth and restoration of the structure of the bone tissue around the roots of the teeth. At this stage, the process of moving the ZTSBIV has already been completed.

5. Topics of reports/abstracts:

1. Periods of formation of the tooth system, age-related features of the structure of hard tissues of teeth, periodontium, alveolar processes, jaw bones, TMJ in children of different ages;
2. Classification of orthodontic appliances; active (mechanical) elements of orthodontic appliances, their mechanism of action;
3. Fixing elements of removable orthodontic appliances;
4. Boundaries of bases of removable orthodontic appliances for the upper and lower jaw;
5. Basics of designing orthodontic removable devices of mechanical impact, principles of action and indications for the use of removable orthodontic devices of mechanical impact.

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.
4. L. V. Smagliuk Basic course in orthodontics / L. V. Smagliuk, A. E. Karasyunok, A. M. Bilous. – Poltava: Blitz Style, 2019. – P.173-184.

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2. Ravindra Nanda, Flavio Andres Uribe - Atlas of Complex Orthodontics.- Elsevier Health Sciences, 2016, 424 p.

3. Charles J. Burstone, Kwangchul Choy. - The Biomechanical Foundation of Clinical Orthodontics. – e-book - 2020 г.
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Information resources

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2. Laura Mitchell, «An introduction to orthodontics», 2013 – 336 p.
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Practical Lesson №6

Topic: Surgical methods of treatment

Goal: student of the Faculty of Dentistry should explain the types of surgical method for the treatment of dental-maxillary anomalies. To analyze age-related indication for various types of surgical treatment of dento-maxillary anomalies. Classify the main types of abnormal attachment of soft tissues to the jaws, namely: frenulum of the lower lip, tongue, small vestibule of the oral cavity. Analyze the results of the clinical assessment of various types of lip crest, tongue a, vestibule of the mouth. To interpret the features of the clinical manifestations of the short frenulum of the lips, tongue and the small vestibule of the oral cavity

Basic concepts: In the process of mastering the material, the student must have knowledge of the mechanisms of growth and development of the facial skeleton and muscles in the age aspect. To depict schematically the types of anomalous attachment of the frenulum of the lips, tongue and small vestibule of the oral cavity, Describe the structural features of the bones of the facial skeleton. To depict schematically the structure of the TMJ in different age periods. Determine the anatomical features of different groups of temporary and permanent teeth

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.

Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 1. What surgical methods are used in the treatment of orthodontic patients?
 2. Types of surgical interventions within the dentition?
 3. Types of surgical interventions within the alveolar bone?
 4. Types of surgical interventions within the basal parts of the jaws and other parts of the skull ?
- 4. Discussion of theoretical issues:**
Surgical methods of orthodontic treatment

Surgical methods of treatment can be used both independently and in combination with the instrumental method for the treatment of dentoalveolar pathology. The main factor that accelerates the remodeling of bone tissue is the intensity of enzymatic processes that develop after the bone has been cut. With pronounced deformities or anomalies in the development of dental arches, jaws and malocclusion, it is not always possible to cure the patient only by orthodontic methods. In these cases, the surgical method can be auxiliary or leading, which allows you to achieve sustainable results.

Tongue frenum plasty

Limitation of tongue mobility as a result of shortening of its frenum or attachment close to its tip is often the cause of malocclusion. Limited mobility of the tongue makes sucking movements difficult in infants.

Lack of mobility of the tongue can impair the process of swallowing and pronunciation of sounds. Under the influence of a mechanical obstacle in the form of a shortened frenum of the tongue, its atypical movements occur in the process of speech.

With a shortened frenum of the tongue, various options for the child's adaptation to this anomaly arise, characterized by certain types of movements of the tongue, its laying between the dentition during function and at rest. E tee options devices cause the occurrence of typical malocclusions. With a normal bridle in a state of physiological rest, the tip of the tongue is adjacent to the palatal surface of the upper anterior teeth. With a shortened bridle, the tongue does not rise sufficiently, and therefore does not exert the necessary pressure on the upper dentition, does not resist the pressure of the muscles of the lips and cheeks. Under the influence of the lip, the upper incisors can bend in the palatal direction; in this case, a mesial occlusion develops due to flattening of the anterior portion of the upper dentition . The pressure of the sedentary tongue is transferred to the anterior region of the lower jaw and promotes its growth. With limited mobility of the tip of the tongue, the muscles of its root hypertrophy, and can disrupt the passage of the air stream through the nasopharyngeal space. An open bite with a shortened frenum of the tongue can be both in the front and in the lateral parts of the dentition. In the anterior region, it arises as a consequence of the location of the tip of the tongue between the teeth due to the impossibility of raising it to the palatal surface of the upper incisors. In the lateral areas, an open bite develops due to the constant spreading of the tongue between the lateral teeth, preventing them from closing . Anomalies of

the occlusion, developed as a result of dysfunction of the tongue, are distinguished by significant stability.

Early plastic surgery of the frenum of the tongue prevents dysfunctions of wetting, chewing, swallowing, sound pronunciation, as well as the occurrence of dentoalveolar anomalies. Orthodontic treatment of such children is combined with remedial gymnastics. Normalization of the function of the muscles of the tongue contributes to the sustainability of the results of orthodontic treatment. Plasty of the frenum of the tongue in older age and in adults improves its function, helps to normalize the position of the tongue. Moving the frenum of the lip . Low attachment of the frenum of the upper lip is considered to be one of the causes of diastemas in the upper jaw. However, practice shows that, despite the prevalence of this anatomical feature, it is not always combined with diastema. In this regard, the importance of low attachment of the frenum of the upper lip as the main etiological factor of the diastema is not fully confirmed and, therefore, the indications for its surgical movement during the period of temporary occlusion should be limited. To clarify these indications, an X-ray examination of the alveolar process in the area of the roots of the central incisors is recommended. If a narrow strip is found on the radiograph in the anterior part of the median palatine suture between the roots of the upper central incisors, which indicates the absence of bone tissue, then this is a sign of the interweaving of the fibers of the frenum of the upper lip into the median palatine suture, which leads to a diastema. When carrying out this simple surgical intervention, the cross-section of the bridle is not enough; it is necessary to carve its fibers, weave them into the median palatine suture, otherwise the results of the operation will not be satisfactory. Indications for displacement of the insertion site of the frenum of the lower lip are chronic localized gingivitis and periodontal disease. The attachment of the frenum of the lip close to the apex of the interdental papilla, especially on the lower jaw, with a shallow transitional fold of the mucous membrane can contribute to the development of periodontal disease. Due to the tension of the soft tissues during lip function, the gingival margin is pulled away from the incisor necks. The periodontal pockets are formed, the circular tooth ligament is destroyed, tartar deposits appear, the apex of the interalveolar septum is destroyed. The development of periodontal disease in this area can also be facilitated by additional strands of the frenum of the lip, which are usually oblique. In such cases, an operation is recommended to remove additional

strands in order to deepen the transitional fold of the mucous membrane. Usually, violations progress with age, especially with anomalies in the size of the jaws (mandibular micrognathia, reduced size of the mandibular angles), close position of the lower front teeth, poor oral hygiene, chronic diseases, endocrinopathies, etc.

Plastic surgery of the vestibule of the oral cavity

R.Yu. Pakalns considers low such a transitional fold, in which the distance from it to the middle of the gingival edge of the central incisors on the lower jaw with a horizontal arrangement of the lower lip is: less than 5 mm, the average - from 5 to 10 mm, in total - more than 10 mm.

Strongly expressed strands of the mucous membrane are those that attach to the interdental gingival papillae and, when the lips or cheeks are pulled, displace them.

If the vestibule of the oral cavity is shallow and the labial bands are strongly developed, then several longitudinal cuts are made along the tops of the bands. The fibers of the cord are stratified at the junction with the periosteum of the jaw. Check if the mobility of the lower lip has improved, or the vestibule of the oral cavity has deepened. Then the removable shaping orthodontic apparatus is fixed. In the formed vestibule of the oral cavity, tampons with iodoform are left, a pressure bandage is applied. On the 3-4th day, an orthodontic appliance is applied, on the 4-5th day, electrophoresis treatment is supplemented to prevent scarring. Further observation is carried out by a periodontist and an orthodontist; the latter corrects the forming apparatus.

The shallow vestibule of the oral cavity is a local traumatic factor for the gingival margin, contributes to the occurrence of periodontal diseases in the localized area or significantly accelerates their development.

Alignment of the supramental sulcus

It consists in leveling the groove on the alveolar process of the lower jaw by subperiosteal introduction of a bone, cartilaginous or plastic implant. Patients are operated on in a hospital according to a technique developed for plastic surgery.

Outcrop crowns Retin IAOD of the tooth

Impaction are teeth that are in the jaw after the expiration of their normal eruption and in which the formation of roots is completed. Most often, impacted are central incisors, canines, second premolars, third molars, and supernumerary teeth.

Deeply set teeth can remain in the jaw if they do not put pressure on the root of adjacent teeth, do not induce resorption, and do not cause neuralgic pain. When

a impacted tooth is located close to the surface of the alveolar ridge in the direction of eruption, its crown should be exposed and a button, onlay or bracket should be fixed on it for further withdrawal using an orthodontic appliance.

Grinding individual teeth

Selectively polish the hills and approximal surfaces of individual teeth, both temporary and permanent, according to indications for such treatment.

One-step rotation of the tooth along the axis

Simultaneously, one-rooted teeth can be returned to have equal roots. After turning the tooth around the axis and placing it in the dentition

The result is recorded using orthodontic appliances.

Dental replantation or transplantation

The prerequisite for conducting is the presence of sufficient space in the dental arch for the correct installation of the tooth, the possibility of creating a hole for it, taking into account the inclination and location of the roots of adjacent teeth, as well as ensuring correct supercontacts.

Removal of individual teeth for orthodontic indications

It is used as an independent method of treatment, as well as in combination with other methods. To determine the indications for removal, complex diagnostics are performed, including clinical examination of patients, photometry, studies of diagnostic models, dental radiographs, orthopantomograms of the jaws and lateral TRG.

It is advisable to remove individual teeth for orthodontic indications during the period of mixed bite and in the initial period of permanent.

R. Hotz proposed a method of sequential tooth extraction. **Sequential extraction** includes the following activities:

- Removal of temporary canines in case of incorrect eruption of the lateral incisors;
- Removal of the first temporary molars when the primordia of the first premolar approaches the surface of the alveolar process, accelerates eruptions;
- Removal of the first premolars, erupted prematurely, contributes to a change in the location of the primordia of the permanent canines and their correct installation.
- Observation of the eruption of canines and second premolars and their installation in the dentition.

compactosteotomy

The principle of the operation is to remove a compact layer of bone at a

certain length, weaken the resistance of bone tissue to the mechanical effect of orthodontic appliances.

Osteotomy and osteoectomy

These are osteoplastic surgical interventions, which are performed for pronounced deformities of the bite and jaws, where the possibilities of hardware treatment are limited and will not bring a positive result.

5. Topics of reports/abstracts:

Classification of frenulum of lips, tongue?

Types of vestibules of the oral cavity?

Method of serial extraction of individual teeth with Hotz.

Method of corrective removal of temporary molars.

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.
4. L. V. Smagliuk Basic course in orthodontics / L. V. Smagliuk, A. E. Karasyunok, A. M. Bilous. – Poltava: Blitz Style, 2019. – P.173-184.

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1. Маланчук В.О., Борисенко А.В., Фліс П.С. та ін. Основи стоматології. - Київ: «Медицина», 2009 р.
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3. Charles J. Burstone, Kwangchul Choy. - The Biomechanical Foundation of Clinical Orthodontics. – e-book - 2020 г.
4. KALEY ANN.- Evidence-Based Orthodontics.- American Medical Publishers.- 2022, 225p.
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8. 3D Diagnosis and Treatment Planning in Orthodontics: An Atlas for the Clinician 1st Edition ed.

by Jean-Marc Retrouvey (Editor), Mohamed-Nur Abdallah (Editor) 2021.

Information resources

1. Державний Експертний Центр МОЗ України

<http://www.dec.gov.ua/index.php/ua/>

2. Laura Mitchell, «An introduction to orthodontics», 2013 – 336 p.

3. Національна наукова медична бібліотека України <http://library.gov.ua/>

4. Національна бібліотека України імені В.І. Вернадського

<http://www.nbuv.gov.ua/>

Practical Lesson №7

Topic: Prosthetic method of treatment. Peculiarities of retention during early orthodontic treatment

Goal: to be able to identify etiological factors and pathogenesis of defects of dentition, to conduct a survey of patients with dentition defects. Be able to make impressions of dentition. Choose the treatment and prevention of this disease.

Basic concepts: Children prosthesis prevents functional, morphological and aesthetic violation of the dentition of children and adolescents. Timely and properly conducted prosthetic teeth and jaws in children saves them from cosmetic and functional defects and thus contributes to the full development of occlusion and face of a child.

Equipment: cephalometric analysis, plaster models, typodonts, panoramic x-rays.
Plan

- 1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
- 2. Control of the reference level of knowledge (written work, written test, frontal survey on basic terminology, etc.)**
- 3. Questions (test tasks) to check basic knowledge on the topic of the seminar:**
 1. Preventive examination of a 4,5-year-old child reveals an untimely missing of all the upper molars. The lower incisors contact with the mucous membrane of the palate. What is the tactics of choice?
 1. Fabrication of a removable lamellar prosthesis
 2. Half-yearly examination till cutting of the permanent teeth
 3. Medical intervention is not required
 4. Fabrication of an orthodontic appliance for deep overbite correction
 5. Annual examination till cutting of the permanent teeth
 2. A 10-year-old boy complains about missing teeth. Objectively: the face is symmetrical, disproportional because of shortening of the lower third. In the oral cavity: the 12, 14, 15, 17, 22, 24, 25, 27, 34, 35, 37, 44, 45, 47 teeth are missing. The X-ray picture shows partial adentia and absence of some tooth germs. Choose the most efficient prosthetic device:
 1. Partial removable prosthesis for both jaws

2. Clasp dental prostheses
 3. The defect should be restored by implants
 4. Cantilever dental bridges
 5. Bridge prostheses
3. Mother of a 3-year-old child complained about a total lack of the crown part of the 51 and 61 teeth. What tactics should the doctor choose?
1. Thin-walled cap
 2. Stump tooth
 3. Tooth extraction
 4. Inlay
 5. Metal-ceramic crown
4. An 11-year-old child complains about missing crown of the 12 tooth as a result of a trauma. The tooth root is well treated. What prosthetic construction is indicated for the removing of this defect?
1. Ilina-Marcosians pivot tooth
 2. Bridge-like prosthesis supported by the 13 and 11 teeth
 3. Partial removable replacing prosthesis
 4. Cantilever prosthesis supported by the 11 tooth
 5. Cantilever prosthesis supported by the 13 tooth
5. A 5-year-old child has missing upper molars. The lower incisors are in contact with the mucous membrane of the palate. Specify the doctor's tactics:
1. Fabricate a removable laminar denture
 2. Examine the child once a year until the eruption of permanent teeth
 3. Medical intervention is not needed
 4. Fabricate an orthodontic appliance for the treatment of closed bite
 5. Examine the child every six months until the eruption of permanent teeth
 6. How to prepare the teeth for the thin-walled orthodontic crowns?
 - A. With the elastic
 - B. It is not necessary to conduct
 - C. Volcanic disks
 - D. Separation discs
 - E. Diamond Heads
7. What designs of prosthetics should be chosen at multiple adentia in the early primary bite period?
- A. Partial removable dentures
 - B. Does not require prosthetics
 - C. Complete removable dentures

D. Bone-like prosthetics

E. –

8. Parents of a 5-year-old child complain about the absence of his lower lateral teeth and the slow chewing of food. From anamnesis: milk molars on the lower jaw were removed due to complicated caries at the age of 3. Objectively: the lower third of the face is shortened, and a deep supramental fold is determined. The lower lip is slightly twisted, thickened. All teeth are temporary, absent 85, 84, 74, 75. A distal bite is formed, complicated by the deep. Which of the following methods of treatment is a leading in the first stage?

A. Prosthetics

B. Hardware

C. Surgeon

D. Hardware and Surgeon

E. Biological

9. The parents of a 3.5-year-old girl complain about the child's difficulty of chewing. Objectively: defect of the dental arch on the lower jaw. The manufacture of partial removable prostheses is intended. Specify the term of the replacement of partial removable dentures in the primary period of the bite for Ilyin-Markosyan?

A. 6-8 months

B. Do not need to change the prosthesis to the physiological change in the teeth

C. 4 months

D. 1.5 years

E. 3 years

10. A 5-year-old child's 54,55,64,65 teeth were removed. What causes premature removal of these teeth?

A. Shortening of dental arches

B. There is no true answer

C. Uneven growth of the jaws

D. Extension of dental arches

E. Extension of the jaws.

4. Discussion of theoretical issues:

Causes of early loos of teeth:

1. Local

- Caries

- Trauma

- periodontal disease

- neoplasms

2. Systemic

- genetic defects

- *Coffin-Lowry syndrome

- *Papillon-Lefevre syndrome

- *Juvenile periodontitis and related disorders

- *Ehlers-Danlos syndrome type VIII

- neoplasms

- *Najdu-Cheney syndrome (acro-osteolysis syndrome)

- *Eosinophilic granuloma (Langerhans cell histiocytosis)

- Immune defects

- *Diabetes mellitus

- *Inflammatory bowel disease

- *Neutropenia

- *Monocyte defects

- *Interleukin-I abnormalities

- *HIV Infection and AIDS

- Collagen defects

- *Ehlers-Danlos syndrome

- Enzyme defects

- *Acatlasia

- * Hypophosphatasia

- Acrodynia

Losing a baby tooth too early can cause dental health complications, and should be addressed as soon as possible via an evaluation by an orthodontist. Depending on the age of your child and the location of the prematurely lost tooth or teeth, interceptive orthodontic treatment may be necessary. When baby teeth go missing too early, it can allow the other teeth around them to shift out of position. And because the permanent teeth are guided into their proper positions by the baby teeth as they erupt, misaligned baby teeth can lead to misaligned adult teeth. And misaligned adult teeth require orthodontic intervention to fix. Premature loss of teeth in children may lead to both functional and esthetic problems. Missing teeth in both anterior and posterior regions may cause malfunctions in mastication and proper pronunciation. If the missing teeth are not replaced, further complications may occur, including adjacent tooth migration, loss of alveolar bone, and irregular occlusion. Considering the sensitive nature of children, loss of teeth may cause the development of insecurities and low self esteem problems

Premature loss of deciduous teeth in the frontal area causing delay its growth, a more significant if the loss of teeth occurred in 2-3 years, and less significant if it occurred in 4-5 years. Due to a defect in the baby's dentition occurs lingual harmful habit. At rest the tongue occupies the space between the alveolar crest and lower front teeth. Constant pressure tongue promotes growth delay frontal area of the lower jaw, leading to the formation of an open bite. Tongue pressure on the crown of the lower front teeth in sagittal direction promotes progenia bite. The loss of permanent teeth in the upper jaw in 7-9 years if untreated ends sharp growth retardation frontal area of the upper jaw, teeth shift towards the defect. Normal development of the lower jaw thus contributes overlapping top and formed progenia neutral bite. Temporary loss of incisors in the mandible leads to displacement of canines and incisors, the remaining side of the defect, to the flattening of the frontal area of the lower jaw. The child is formed prognathic neutral bite. The space that appears between the incisors of the upper and lower jaw in the sagittal plane is filled further lower lip, there is a habit of sucking the lower lip, causing the weight of the clinical picture prognathous occlusion increases. Premature loss of lower permanent incisors (usually due to injury) at 7-9 years of age with no orthopedic treatment also may result in the formation of a neutral prognathic bite.

Premature loss of first temporary molar can lead to tilting and moving the temporary canines and second molars temporary side defect. In a dramatic shortage of places to move there first premolar mesial second molars. Mesial temporal movement of the upper molars mesial lead to displacement of the first permanent molar, for this reason, the first permanent molars formed contact characteristic distal occlusion. With the loss of temporary lower first molar mesial displacement and subsequent second temporary molar on the first permanent molars mesial contact possible that promotes mesial bite.

Premature loss of temporary molars on one side ends teeth-alveolar extension on the opposite jaw.

This dramatically deformed occlusal plane.

It should also be noted that the premature loss of temporary molars often complicated by atypical (often vestibular) provisions canines. Because mesial movement of second temporary molars and permanent molars, and hence the flattening of the dental arch in this section, the first permanent molars occupy more mesial position than they should because permanent canine that cut later finds a place in dental vestibular arc and is (usually) or palate (rarely).

Adjusted us is not an exhaustive list of possible violations of bite in the early loss of teeth suggests the importance of prevention and timely treatment.

The early loss of teeth leads not only to the development of deformation bite, but also reduces the function of chewing, promotes speech disorders and occurrence of bad habits, perhaps underdevelopment, flattening the face (with the early loss of permanent incisors), pathological changes in the temporomandibular joint (with multiple loss of molars by lowering the bite, delayed dentition).

Type defect teeth of a child is determined by the classification proposed L.M.Demnerom and V.P.Lepyhynim (1985). According to this classification of dental defects due to early removal of

temporary teeth and changing bite, divided into three groups on the basis of topography, length of the defect and functional disorders.

In Group I - included included defects of the dentition, formed as a result of a premature removal of temporary tooth on one or both sides of the jaw (unilateral, bilateral).

In group II included included defects of dentition in which no two adjacent temporary teeth. The first group includes subgroup II unilateral defects, the second - bilateral.

In Group III defects attributable end, when there are two or more teeth that are located nearby. This group contains two subgroups: the first are unilateral, the second - the final bilateral defects.

This classification is advisable to resort in cases where the loss of teeth is not complicated malocclusions. If the child having significant malocclusion, he (i.e. occlusion) classified as anomalies indication of the nature of the anomaly and topography defect teeth.

Due to dynamic nature of growth in children and adolescents, prosthetic appliances must not hinder development of orofacial system, and must meet adequate esthetic and functional standards. Dental prosthetic appliances in paediatrics must be planned with respect to the special conditions that led to tooth loss or damage. Multi-disciplinary approach is needed, under constant supervision of paediatric dentist and orthodontist, as well as regular checkups with clinical and radiographical examinations.

Prevention

Providing your child with proper dental care, including semi-yearly appointments for professional cleanings as well as the tools to brush and floss their teeth, can prevent the periodontal disease than can lead to premature tooth loss. Children who

have diabetes and are at risk for decreasing bone density should undergo preventive care for osteoporosis and osteonecrosis of the jaw if needed; the child's endocrinologist or pediatrician will monitor bone density condition on a regular basis.

Wearing mouthguards, helmets and other protective equipment can prevent facial trauma during sports as well.

Treatment of children with acquired defects dentition and teeth by using prosthesis (group of children who did not come irreversible changes bite) or through orthodontic correction followed by prosthetic bite.

Treating children - an important means of preserving function and preventing deformities bite.

Especially large range of preventive influence prosthesis in the premature loss of teeth in the side area because it prevents abuse of the process of becoming bite height, shortening of the dental arch, the emergence teeth-alveolar elongation and bad habits, horizontal movement of teeth erupted, and intraosseous shift follicles teeth that do not erupted normalizes growth of the jaw bones.

To properly decide on what design of prosthesis indicated for children and adolescents in each case, it is necessary to know how is the growth of the dental arches and when it can be considered complete.

The development of the dental arches and alveolar processes influenced by two factors: first - growth inherent in the body as a whole; second - teething.

In pediatric practice, the following design dentures, tabs, crowns, fixed dentures, removable (partial and full), spacers between teeth and dentures with the function of stimulating growth.

5. Topics of reports/abstracts:

- The development of the dental arches and alveolar processes
- Prevention methods

6. Summarizing the information received at the lesson.

7. List of recommended literature:

Main:

1. Lectures on the relevant topic.
2. Flis P.S. et al., Orthodontics: a textbook for students of stomatological faculties of higher medical educational institutions of IV level of accreditation - Kyiv, 2019, 305p.
3. Golovko N.V.-Orthodontics.-Poltava.-2015. - with. 128-132.

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