

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

Approved
at the meeting of orthodontics department
«____»_____20____y.
protocol №____by _____
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METHODICAL RECOMMENDATION
for independent work of students during the preparation
to practical lessons and on the lessons

Academic discipline	Orthodontics
Module №1	Orthodontia. Diagnostic of dentognathic anomalies and deformations.
The theme of the lesson № 1	The stages of the teeth-jaw apparatus development in age aspect: prenatal, postnatal. Embryonic development of the face and jaws. Anatomico-physiological features of the oral cavity and the temporo-mandibular joint newborn. Mechanisms of growth and development of the teeth-jaw region during this period of development.
Course	III
Faculty	Preparation of foreign students

1. The relevance of the topic. Knowledge of the features and characteristics of the stages of the teeth-jaw apparatus development in age aspect (prenatal, postnatal) required students to determine the type of development of the bite, deviations from the correct structure of the bite that will help in the future, assign an appropriate set of preventive or therapeutic measures.

2. Specific objectives:

To know the classification of human ontogenetic development;

To know the structure of the skull (face and brain);

To know the phases of the prenatal and postnatal stages of human development;

To know the embryonic development of the face and jaws;

To know the pathogenesis of the formation of congenital malformations of the face;

To know anatomical and physiological peculiarities of the oral cavity of the newborn;

To know the anatomical and physiological characteristics of temporo-mandibular joint newborn;

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

Name of previous disciplines	Skills
1. Anatomy	to determine the structure of the cerebral and facial departments of skull; to determine the structure of the temporo-mandibular joint; to determine the anatomical characteristics of different groups of temporary and permanent teeth.
2. Histology	to determine the periods of development of the embryo and fetus; to determine the embryonic development of the maxillofacial region; to determine the periods of development of temporary and permanent teeth, to be able to describe them; to determine the histological structure of hard tissues temporary and permanent teeth.

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

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

Terms	Definition
1. The embryo	the period of prenatal development prior to 7 weeks of pregnancy
2. The fetus	the period of prenatal development from 3 months
3. Germinal period	in fact, the embryonic period
4. The philtrum	the middle part of the upper lip
5. Primary palate	the middle part of the upper lip and incisor bone which develop from frontal process
6. Neoplasene period	when the placenta is formed
7. The Bish lumps	the fat pads of the cheeks
8. The Pfaundler-Liushke's cushions	transverse striations of the lip
9. Physiological infantile retrogeny	distal position of the lower jaw relative to the upper
10. The Roben-Mazhito's fold	double fold of mucous membrane in the anterior upper and lower jaws region

4.2. Theoretical questions to the lesson:

1. Classification of human ontogenetic development.
2. The structure of the skull (face and brain).
3. Phases prenatal stage of human development.
4. The stages of development of the teeth-jaw apparatus in utero.
5. Embryonic development of the face and jaws.
6. Anatomico-physiological features of the oral cavity of the newborn.
7. Anatomical and physiological characteristics of temporo-mandibular joint newborn.

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

- to draw a diagram of the ontogenetic development of the face, palate, alveolar processes;
- to assess KDM in patients with congenital malformations (the complete cleft defect of alveolar process, hard and soft palate);
- to determine the age of the child, given the clinical history and photos;
- to perform a photo of a patient with congenital malformations of the face;
- to determine violations in the formation of the maxillofacial region.

The content of the topic:

Characteristics of growth and development largely depend on the properties and characteristics that it has received from parents. But there are some patterns of growth and development inherent in most children. Depending on the nature and

intensity of changes occurring in the body, it is customary to divide human development in the respective periods.

Among the many classifications of human ontogenetic development, the most common is modified classification by N.P. Gundobin.

A. Intrauterine stage:

a) phase of embryonic development (II- III of the month);

b) phase of placental development (with III months before birth)

B. Extrauterine stage:

the neonatal period (up to 3-4 weeks);

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

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

preschool period (3 to 6 years);

primary school period (from 7 to 11 years);

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

After the birth of a human life according to the WHO classification by age is distributed as follows:

Newborn 1-10 days

Infants 10 days - 1 year

Early childhood 1-3 years

The first childhood is 4-7 years

Second childhood aged 8-12 (boys) 8-11 years (girls)

Teens 13-16 (M), 12-15 (W)

Youth age 17-21 (M), 16-20 (W)

Mature age

I period 22-35 (M), 21- 35 (W)

II period 36-60 (M), 36-55(W)

Old age 61-74(M), 56-74 (W)

Old age 75-90 (M and W)

Long-lived 90 years and older.

L.P. Zubkova and F.Y. Khoroshilkina (1993) to perform the basic tasks of preventing specify 10 periods of the formation of the dentition with regard to its physiological, morphological and functional changes:

I - prenatal development of the embryo and fetus (formation of tissues and bodies of dentoalveolar and facial systems);

II - from birth to 6 months (prior to eruption of first temporary (milk teeth);

III - from 6 months to 3 years (the formation of temporary occlusion);

IV - from 3 to 4.5 years (formed temporary occlusion);

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

VI - 6 to 9 years (the period of the mixed occlusion);

VII - 9 to 12 years (the second period of the mixed occlusion);

VIII - 12 to 15 years (permanent occlusion);

IX - 15 to 21 years (the completion of the permanent dentition);

- from 21 to 40 years (active function of denta-jaw region);

- from 40 and more (decrease in the function of the denta-jaw region).

Because the child is constantly growing and developing at each age and stage of his life appears in a special morphological, physiological and psychological quality, there is a definite need to highlight the process of human ontogeny the number of periods or stages of development. Among the stages of ontogenesis are the most important are two: prenatal or antenatal and postnatal development, or proper childhood.

The prenatal period is primarily characterized by morphogenesis, which embodies the organogenesis of the various systems of the body that is manifested by a very abrupt and significant changes in the shape and structure of organs at extremely intense and differential growth.

Prenatal stage from conception until birth, lasts an average of 270 days. It is customary to distinguish several periods of prenatal development:

1. Germinal, or actually the embryonic period. It starts from the moment of fertilization and ends with implantation of blastocyte formed in the mucous membrane of the uterus. The duration is about 1 week.
2. The period of implantation. Lasts about 40 hours, i.e. about 2 days. These two periods are sometimes combined as biomedical significance of their large. At this time, 50-70% of fertilized eggs do not develop, and teratogenic factors, especially related to the group of strong cause pathology not compatible with the survival of the embryo (aplasia and hypoplasia), or form severe malformations due to chromosomal aberrations or gene mutants.
3. The embryonic period. It lasts 5-6 weeks. Nourishment of the embryo comes from the yolk sac. Its most important feature is the bookmark and organogenesis of almost all internal organs of the unborn child. Therefore the action of teratogenic factors (exogenous and endogenous) causes EMBRAPA, which are the most gross anatomical and developmental malformations. Fetal age from 3 to 7 weeks. considered to be a critical period of development.
4. Neofetal, or embrio fetal period. Lasts 2 weeks, when the placenta is formed, which coincides with the completion of the formation of most organs (except the Central nervous and endocrine systems). This period is important because the correct formation of the placenta, and consequently the placental circulation determine the further intensity of growth of the fetus.
5. The fetal period. Lasts from 9 weeks. before birth. It is characterized by the development of the fetus is provided hemotrophy food. In fetal period, there are two subperiods: early and late. The early fetal period (from 9 weeks before the end of 28 weeks) is characterized by strong growth and tissue differentiation of the fetus. The action of adverse factors already leads to the formation of defects structure, but may manifest retarded growth and differentiation (hypoplasia) of the bodies or impaired tissue differentiation (dysplasia). Since the immune system is only beginning to emerge, the response to infection is expressed sprucedale proliferation reactions, which lead to cirrhosis and fibrosis. However, perhaps the birth of an immature, a premature baby. A set of changes of the fetus that occurs in this period, called collectively "early fetopathy".

6. Late fetal period begins after 28 weeks of pregnancy and lasts until birth. The defeat of the fetus in this period will not affect the process of formation of organs and tissue differentiation, but can cause premature termination of pregnancy birth small height and functionally immature child. When continuation of the pregnancy may be malnutrition of the fetus (intrauterine hypotrophy) or General underdevelopment, there is insufficient mass and body length of the newborn. Feature the damaging effect of infection in this age there is absolutely a certain specifics of the damage, i.e., the appearance of this infectious process with morphological and clinical signs of the disease, typical for this type of pathogen. Finally, late in the fetal period provides the process of depositing many components of the diet, which may not be in sufficient quantity is introduced to the child with mother's milk. So, depositing salts of calcium, iron, copper and vitamin B12 can for a few months to maintain balance of nutrition of the infant. In addition, in the last 10 -12 weeks of pregnancy is achieved a high degree of maturity and protect the vital organs of the fetus from possible violations of oxygenation and trauma in childbirth, and accumulated in transplacental transfer of immunoglobulins to the mother provide a high level of passive immunity. In the last weeks of pregnancy also is ripening "surfactant" which provides the normal function of the lung and epithelial whistling of the respiratory and digestive tracts. Therefore, the birth of a child, even with a relatively low degree of prematurity significantly affect adaptation possibilities and the risk of various diseases.

Late fetal papered, of course, goes in the intra natal phase, which is calculated from the time of the regular contractions until the ligation of the umbilical cord. At this time you may experience injuries of the Central and peripheral nervous system, which creates an immediate threat to life. In addition, severe violations of the umbilical cord blood circulation or breathing.

Terms of maturation and development are of exceptional importance because the power of the body 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 the death (abortion, stillbirth), malformations from heavy, incompatible with life, to light abnormalities and functional impairment that can occur immediately after birth or later (sometimes after years and decades).

The embryo at the age of 12 days between the front brain and heart bubble protrusion is formed a small depression of the ectoderm, which is called oral cavities, or oral pit. Gradually going deeper, the oral cavity reaches the blind end of the anterior intestine, which is separated pharyngeal membrane. Pharyngeal membrane consists of sheets of ecto - and endoderm that are adjacent to each other. At the end of the 3rd week of the pharyngeal membrane breaks and the front intestine begins to communicate through a mouth hole with the external environment. Around the same time on the sides of the head of the division of the embryo are formed two small recesses, the first and second external gill or pharyngeal slits, and by the end of the 1st month be the third and fourth gill slits, which are located caudally from the first two. Between the cracks by proliferation of the mesenchyme thickenings are formed, which are called the Gill or pharyngeal

arches. The first arc, which is located cranially from the first gill slit called jaw. The second arc which is located between the first and second GILL slits, called the hyoid.

At the end of the first month of the oral fossa limit 5 mounds, or processes. One of them (frontal lobe) is situated above the oral fossa, maxillary two - on either side of him, and two mandibles – slightly below the previous one. These processes are the elements of the first gill arch.

In the process of further development mandibles processes closer together and fused between them in the midline to form the mandible and lower lip. The maxillary processes fuse with mandibles in the lateral parts, forming the cheeks and lateral areas of the upper jaw and upper lip; however, the medium line, they do not reach. In the space between them down the end of the frontal process, which depart from the nasal processes, which limit the nasal passages, and the middle part of the frontal bone forms the nasal septum with subsequent incisor bone and the middle part of the upper lip.

Thus, the whole upper part of the face (forehead, eye areas and nose) are formed of the frontal bone; the lower of the two mandibular. In the middle part of the face sides is formed from the maxillary processes, and the whole middle section with the frontal process. The entity formation, fusion processes that form them ends at the 7th week of fetal development. Violations of the processes of fusion lead to the appearance of congenital malformations of the face. The development of the oral cavity is associated with the development of the nasal cavity. First, both cavities are separated from each other and the primary palate. Primary palate formed by the medial process, which from the side of the mouth have fused with the maxillary and lateral nasal processes, encircle the bottom of the olfactory pits.

From tissues of the primary palate are formed: the middle part of the upper lip (philtrum); a middle part of the upper jaw, which holds the incisors and anterior hard palate (premaxillary incisor bone).

Further, at the beginning of the 2nd month of fetal life, the development of final heaven. It is formed from lamellar outgrowths on the inner surface of the maxillary processes (called Palatine processes) that grow towards each other and fuse in the midline with each other and with the nasal septum that descends from above. The distal parts of the palatal processes that have no connection with the nasal septum, merging to form the soft palate and the uvula. In the process of forming the frontal part of the secondary palate it shall include the part of the primary palate with the palatal papilla. The palate is separated from the lip and cheeks narrow arcuate sulcus - primary labial furrow. The same groove is on the lower jaw. From both furrows grows in depth epithelial lamina, which is divided into two: external and internal (tooth). Between them grows mesenchyma, which forms the protrusion of the alveolar process. Thus the front part of the upper lip and the upper alveolar process develops from the primary palate. As a result of splitting the vestibular plate lip furrow deepened, and between the lip and cheek on one side and alveolar bone on the other - formed the threshold of the oral cavity. Initially, a very wide mouth in the future due to the merger in the lateral parts of

the upper and lower lip gradually decreases. At the same time the cheeks are formed, in which the seam can be maintained sebaceous glands.

Tongue comes from the first three Gill arches. At the end of the 4th week of intrauterine life on the oral surface of the first (zygomatic arches arise three prominences: in the center - unpaired tubercle and sides of two side bolsters. They increase in size and merge to form the tip and body of the tongue. Later from swelling on the second and partially the third and the Gill arch develops the root of the tongue with the epiglottis. The root with other parts of the tongue is at the 2nd place of the drainage remains furrow, which is called ultimate (sulcus terminalis). Muscles of the tongue develop from myotome. The masticatory muscles are formed from the first gill arch. Development of the salivary glands. All glands of the oral cavity are derived from stratified squamous epithelium. Before all of the embryo: there is a prominence of the parotid gland (4 weeks), then the submandibular (6th week) and sublingual (8-9 weeks). Minor salivary glands become visible in the mucosa much later. The formation of tonsillar apparatus in the pharynx begins at the 3rd month of the embryonic period. After the completion of the soft tissues leads to the formation of bone structures. Bones of the facial skull, which have a direct relationship to the oral cavity are epithelial (bone connective tissue origin). The future jaws start at the relatively early stages of the formation of the faces of the human embryo. The first rudiment of the upper jaw is in the pre-fetus by length of 20 mm in the form of skeletonogenesis the accumulation of mesenchyme cells. One of the first bones of the facial skull, which are subject to ossification is the upper jaw.

By the end of the 2nd month of fetal development, when the growth of the maxillary and frontal processes, which form the middle division of the face in them appear thicker six centers of ossification; they begin with the first mineralization of the Palatine process and of the lateral parts of the upper jaw, and a little later the Central foramen in the form of an independent incisor bone, which later fuses with the maxillary bones. The upper jaw relates to the bones, which are formed on the basis of connective tissue, bypassing the stage of cartilage.

Development of the lower jaws begins with the formation of bone tissue from several points of ossification, located in the tissue which is adjacent to Meckel's cartilage. Gradually formed coating bone, which limits the cartilage. The cartilage is reduced, giving place to the body of the mandible that develops. The rear parts of the jaws, its branches, and formed independently from Meckel's cartilage from the respective points of ossification. The ossification of the two halves of the lower jaw ends with their coalescence, i.e. the lower jaw is transformed into unpaired bone after birth to the end of the first year of life. Alveolar process of the jaw bone develops from mesenchyme, which limits the rudiment of the tooth. Prominence of the alveolar process of the mandible occurs in the 3rd week of fetal development, the upper jaw is on the 4th. The growth of the alveolar process with the body of the mandible occurs up to 1 month in the upper jaw – to 3-month. With the end of the teething ends with the formation of the alveolar region, and with the end of root formation - the formation of its foundation. In the thickness of the jaws are shaped,

formed and developed the rudiments of the teeth. With the development and eruption of the teeth closely related to the growth and development of the jaws.

As described above, the face develops as a result of accretion of various processes. However, complete connections don't happen - in zone of their connection mesenchyme one process is separated from another groove area, which has a small number of cells. In the course of development, these grooves are smoothed, thus forming the final configuration of the face. In connection with face and oral cavity formation from different structures, which merge with each other, can form a number of maxillofacial anomalies, the cause of which disorder of the normal merging processes.

By the end of the 2nd month of fetal development, when the growth of the maxillary and frontal processes, which form the middle division of face in them appear thicker six cores of ossification; they begin with mineralization first, the development of the teeth.

There are the following stages of development temporary and permanent teeth:

1. Bookmark and education of teeth germs.
2. Cell differentiation of the germs.
3. The histogenesis of dental fabrics.
4. The mineralization.
5. Eruption.

On the 7th week, when the embryo is like a man and the term "embryo" change the term "fetus", he along upper and lower edges of the primary oral cavity appears thickening: layered plane epithelium. This epithelium grows into to be mesenchyme and forms the dental lamina, which grows in depth acquires a vertical position. On its edge appear flask-shaped proliferations of the epithelium, which take the form of caps, called enamel organs. In each jaw there are 10 such growths, which correspond to the number of following time tooth. Concave part of the cap is made mesenchyme, which forms a so-called dental papillae. Mesenchyme limiting each tooth bud, arranged in a special layer called have a dental pouch. The cells of the enamel organ in the process of its development takes a variety of forms. The epithelium that forms the inner surface of the cap (internal epithelium), it becomes cylindrical. The outer surface of the cap cover small cells of the outer epithelium. Located between the outer and inner layers of epithelial cells acquire star look and get the name of the pulp of enamel organ. But only those cells that are adjacent to the inner layer of epithelial cells stay small, round or oblong forming the intermediate layer of enamel organ. The cells of the inner and partly of the intermediate layers to form on the enamel and get the name adamantanes, or ameloblasts. Dental papillas enables the development of dentine and pulp. From the mesenchyme of the dental SAC develops cement and periodontium. The recess 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 the tooth root. At the transition of the internal epithelium in both the outer layer of epithelium grow into and form the so-called Hertvik vagina, which is as it were the form for the formation of dentin, which is the main part of the tooth root.

The dentin begins to form on the tip of the papilla over the already small size of the embryo; it develops the enamel of the tooth. Beginning at the apex of the papilla, the formation of the tooth is gradually spreading to sides in the direction following the top of root. Before the start of deposition of dentine on the outside from the dental sac form the bone beams of the future cells of the tooth. The formation of the crowns of the teeth (mineralization) starts with the Central incisors at the end of the 5th month of fetal development, and then distally located dental germs. Since the processes of formation of organic substance of teeth can only be evaluated on histological preparations on the development of teeth is judged in the processes of mineralization, which starts in a short period of time after the formation of the main substance of the enamel and dentin. It is possible to explore only using X-rays. From the moment of birth and up to 14-18 years in the body there are significant changes, which are caused by its growth. In turn, these changes result in anatomizing features of the growing organism. The most pronounced of these features in newborns and infants.

THE STRUCTURAL FEATURES OF THE FACE AND NEWBORN ORAL CAVITY

The proportions of the face newborn and the adult are different. It is mainly determined by the ratio of the cranial and facial divisions of the skull. The head of the newborn larger size and is 1/4 of the length of his body. The skull of the newborn is small in size facial region compared to the brain. Because of this facial region is almost not protruding. The cerebral part of the skull increases much less than the front. Another peculiarity of the skull of the newborn is the presence of fontanelles. They are at the intersection of the seams, where the remains of the connective tissue. Their presence is of great importance, because it allows the bones of the skull to shift during birth. All fontanels overgrown by 2-3 months after birth, except the frontal (in the second year of life). Pneumatic cavities (maxillary, etc.) in the bones of the skull have not yet developed. Due to the weak development of the musculature, which has not yet started to function different muscular mounds, ridges and lines weakly expressed. The newborn marked disproportion between the middle and lower department of the face, which is due to the fact that the height of the bite is provided only gingival rollers.

The nose of the newborn is relatively small, nasal passages narrow. Subcutaneous fat layer is fairly evenly spread and gives the face of the child characterized arrogant and fullness. In the thickness of the cheek fat pads are located, the so-called Bish lumps. Fat layered cheeks is a self many lobed body, which is contained in its own capsule. Both anatomical structures contribute to sucking. Upper lip prevails over the lower, forming a step lip. Lips of a newborn are soft, swollen, trunk-liked, cross-strips (Pfaundler-Liushke's probosciform cushions) with sucking pad on the upper lip, thanks to it structure the child tightly covers the nipple. Deep mental fold, chin sloping back.

The factors that contribute to sucking, also belong to the physiological infant retrogeny. The distance between the apexes of the alveolar processes of jaws in the sagittal plane reaches 5-7 mm and the vertical gap is 2.5-2.7 mm, its absence

leads to the development of 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 that connect longitudinal seam. During early embryonic development between the two parts located maxillary bone. Violation of embryonic development at 2 months pregnant cause malformations of the face (cleft defects of the upper lip, alveolar process, palate). The upper jaw of the newborn is wide and short, consists mainly of the alveolar bone, which is located just below the palate. The palate is flat with distinct transverse folds.

On average, on the palate, there are 4-5 pairs of transverse folds, 2-3 pairs of which extend from the palatal sagittal suture. Transverse folds to create the roughness of the mucous membrane and contribute to the retention of the nipple during feeding. The maxillary cavity only is planned on the radiograph has the appearance of enlightenment oblong. It lies medial to the alveolar process. The beginnings of teeth are located almost under the eye fossa and separated from it a thin bone plate.

The length of the upper jaw of the newborn is 25 mm, width 32 mm (T.V. Sharova, G.I. Rogozhnikov, 1991, p.).

The lower jaw consists of 2 unconnected halves, which are connected by connective tissue. Alveolar process better developed than the basal part. This is due to the presence of rudiments of temporal and permanent teeth.

Khoroshilkina A.J. (1982) cites data according to which the distance from the edge of the gums of a newborn to the lower edge of the jaw is equal to 20,2 mm.

The mandibular canal is almost a straight form and is located close to the edge of the lower jaw. Branch of the lower jaw is almost not developed, and the articular process rises above the level of the alveolar bone. The angle of the mandible on average 135° - 140° (E. N. Zhulev, 1995).

Each jaw has 18 follicles, including 10 temporary and 8 permanent teeth (6321/1236). The rudiments of the temporary teeth in both jaws are located from the labial side, the permanent - lie deeper with the lingual side of the lower jaw and palate on the upper.

The gingival membrane is a double fold of mucous in the anterior part of the upper and lower jaws (Roben-Mazhito's fold). It is rich in small papilla form bumps, blood vessels, so they are able to be condensed. The periodontal membrane has a large number of elastic fibers. This anatomical creation is clearly seen immediately after the baby stops sucking the breast during feeding.

A child has a well-developed function of sucking. The nipple of the mother annoying reflex zones of the oral cavity. Excitation is transmitted by afferent fibers of n. trigeminus, which innervates the oral cavity, a sucking center in the medulla oblongata. From the center of the pulse motor fibers (3 nerves: hypoglossal, facial and triple) leads to the contraction of the muscles (hypoglossal - excites muscles of the tongue; triple - chewing, lateral pterygoid and buccal muscles; facial - stimulates muscles of the lips). Thus, shrinking muscles that push the lower jaw forward, by reducing the circumoral muscles tightly covers the nipple with the lips, the tongue presses the nipple to the palate.

Temporomandibular joint (TMJ) is a complex joint not only anatomical structure but also in function. It belongs to the paired, combined, incongruent joints. TMJ on both sides (left and right) constitute a closed circuit, for movement in one joint causes movement in another. The joint is biaxial, movement in it occur in two directions: horizontal and vertical.

The joint consists of an articular head of the mandible, glenoid fossa of the temporal bone, the articular tubercle of the temporal bone, articular disc, the joint capsule (joint capsule) and the joint ligaments.

Newborn the structural features of the TMJ are:

- the head of the articular process nearly round shape, has almost the same dimensions (transverse and ante-posterior), has not expressed its inclination forward, head covered with a thick layer of fibrous connective tissue;
- the articular fossa, which is the receptacle for the head of mandible, rounded shape; it is in front of the articular tubercle, and at the rear a pronounced articular cone, which restricts the movement of the mandible towards the middle ear and prevents the pressure head on the drum portion of the middle ear;
- mandibular fossa of the function entirely, as the mandible is displaced distally (as physiological infant retrogeny);
- the articular head located in the posterior part of the mandibular fossa;
- the thickness of the bones of the vault of the fossa is not much greater than 2 mm;
- the depth of the mandibular fossa slightly more than 2 mm;
- the articular disc is a soft layer of rounded form with a concave bottom and a convex top with a barely noticeable thickness in front and back; the disk consists primarily of collagen fibers;
- no villi of the synovial membrane of the joint capsule. The absence of the articular tubercle, acceptance the slope of the underdeveloped branches of the mandible, physiological retrogeny, wide flat fossa, unformed articular disc and cone create favorable conditions for movements of the mandible in the sagittal plane, which are required for full flow sucking function.

Materials for self-control:

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

1. To sketch skull with a description of the bones of the cranial and facial skull.
2. To sketch in the album the scheme of formation of the maxillofacial region.
3. To sketch the infantile retrogeny.
4. To record the table with terms of temporary and permanent teeth formation.

B. Tasks for self-control:

1. How many processes limits the oral fosse at the end of the first month of fetal development:

five

two

four

three

six

2. The upper part of the face is formed from:

frontal process

the maxillary processes

the mandibular processes

the frontal and maxillary processes

nasal bone

3. The middle part of the face is formed from:

the frontal and maxillary processes

the maxillary processes

the mandibular processes

frontal process

the upper and mandibular processes

4. The lower part of the face is formed from:

the mandibular processes

the frontal and maxillary processes

the maxillary processes

frontal process

the upper and mandibular processes

5. The fusion processes which form the face ends within the following periods of the prenatal period:

by 7 weeks

at 4-5 weeks

6 weeks

at 3-4 weeks

for 8 weeks

6. The final development of the palate takes place in the following periods of the prenatal period:

on the second month

on the fifth month

on the third month

on the fourth month

on the first month

7. The first gill arch has been called:

jaw

hyoid

thyroid

branchial

nasal

8. The development of the oral cavity associated with the development of:

nasal cavity
orbit
sinus cavity
primary palate
anterior cranial fossa

9.From the primary palate is formed by:
the middle part of the upper lip
cheeks
the wings of the nose
lateral areas of the upper lip
the nasal septum

10.The second gill arch has been called:
hyoid
jaw
thyroid
branchial
nasal

11. In which terms is the formation of 5 processes in the head division of the embryo?
25-30 days
15-20 days
20-25 days
10-15 days
30-35 days

12.The tongue forms from:
the first three branchial arches
the second branchial arch
the first branchial arch
the third and fourth branchial arches
the first and second branchial arches

13.The critical period of the harmful factors action that leads to congenital anomalies correspond to the following terms:
4-8 weeks of pregnancy
4-6 weeks of pregnancy
6-8 weeks of pregnancy
2-4 weeks of pregnancy
2-8 week of pregnancy

14.The formation of teeth starts as follows:
with 7th week

with 3th week
with 5th weeks
with 6th weeks
with 4th weeks

15.A characteristic feature of newborn sucking is:
at the same time breathing and swallowing
at the same time swallowing
simultaneously with the chewing
at the same time crying
simultaneously with the speaking

16.The follicles of the canines in the upper jaw of the newborn are:
almost under the orbit
near the maxillary tuberoses
in the palate
in the body of the jaw
in the ramus of the jaw

17.How many follicles deciduous teeth each jaw has a newborn:
10
8
6
5
16

18.The number of permanent teeth follicles in the each newborn jaw is:
8
6
4
2
10

19.Physiological (newborn) retrogeny represents:
the distal location of the lower jaw
the medial location of the lower jaw
the neutral location of the lower jaw
the displacement of the lower jaw to the right
the displacement of the lower jaw to the left

20.Sagital space at physiological (newborn) retrogeny is:
5-7 mm
6-8 mm
4-5 mm
3-4 mm

2-3 mm

21. The lower jaw angle size in newborn is:

135-140°

125-135°

115-125°

105-115°

95 - 105°

22. The frontal fontanel closed on the following date:

in the second year of life

in 2-3 months

in 5-6 months

in 10-12 months

in 6-8 months

23. The periodontal membrane of a newborn is called:

Roben-Mazhyto

Hawley-Herbst

Ziebert-Malygin

Ehsler-Bitner

Linder-Hart

24. The characteristics of the temporomandibular joint newborn structure not include:

expressed articular tubercle

the absence of the articular tubercle

the presence of articular cone

the nearly rounded shape of the articular head

flat articular fossa

25. From primary palate tissues forms:

the middle part of the upper lip and alveolar process of maxilla

the lower jaw

alveolar process of the lower jaw

the soft palate

the hard palate

26. Which of the following muscles is well developed in the newborn:

m. digastricus

m. masseter

m. temporalis

m. medialis pterigoideus

m. lateralis pterigoideus

27. Which of the following muscles does not belong to mimic?

m. pterigoioleus lateraris

m. mentalis

m. platysma

m. risorius

m. orbicularis oris

28. Which of the following muscles does not belong to mimic?

m. pterigoideus medialis

m. zygomaticus major

m. levator labii superior

m. incisioi labii inferioris

m. risorius

29. Which of the following muscles does belong to chewing?

m. pterygoideus medialis

m. orbicularis oris

m. buccinator

m. zygomaticus

m. risorius

30. Which of the following muscles does belong to mimic?

m. risorius

m. masseter

m. temporalis

m. pterigoideus medialis

m. pterigoideus lateralis

31. How many teeth follicles is in the alveolar arch of each newborn jaw?

18

10

6

16

12

32. Where are the follicles of the temporary and permanent teeth in the upper jaw of a newborn?

at the bottom of the eye orbit

in the alveolar crest

in the palatal stitch area

in the body of the jaw

near the maxillary sinus

33. How are the permanent teeth follicles position in the newborn mandible?

horizontally, crowns are distally
vertically
horizontally
horizontally, crowns are anterior
vertically, crowns are anterior

34. In what period of child's development the face and jaws anomalies arise?

1-3 months intrauterine life
5-6 months intrauterine life
3-4 months intrauterine life
3-5 months intrauterine life
6-9 months intrauterine life

35. The lower jaw develops from:

mandibular processes
maxillary processes
maxillary and frontal processes
membrana palatonasalis
processus glodularis

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