

State institution
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The Department of Pediatric Dentistry

Clinic, diagnosis, treatment, prevention, prosthetics various
dentofacial anomalies and deformities.

For 3-5 years students of international faculty

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Foreword

Orthodontics- section of dentistry, has been studying the etiology and pathogenesis of dentoalveolar anomalies, improvement of methods of diagnosis, the development of methods of prevention and elimination of anomalies of the teeth, the form of the dental arches, malocclusion, managing the growth of the jaws, the normalization function of dental system, the elimination of aesthetic disorders, the study of the influence of dentition abnormalities in the development of related organs and body as a whole. The problem of providing orthodontic care for children, adolescents and adults remains relevant because of dentoalveolar anomalies have considerable spread. Currently, there has been five major areas of development: 1) Preventive Orthodontics; 2) Specialized treatment of children in orthodontic offices or classrooms; 3) Orthodontic treatment of adults; 4) Orthodontic treatment and tooth-jaw denture patients with congenital clefts in the maxillofacial region in the system of complex treatment; 5) Orthodontic treatment as the preliminary and final stages after surgical removal of tooth-jaw-facial anomalies.

Toolkit is designed for students of 3-5 courses of the international faculty.

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First part

"Diagnosis of dentofacial anomalies and deformations."

Maxillofacial apparatus child - is not chewing apparatus adult in miniature. It goes a long way, differentiation, complexity functions.

Embryonic period of dentition.

Most clearly the relationship of ontogenesis and phylogenesis of the masticatory apparatus is shown in the embryonic development of an organism. Face of the embryo is formed from seven shoots first gill arch, one frontal, two nasals, two maxillary and two mandibular. Begins registration front of the head from the second week of embryonic development.

In twelve days the embryo appears recess (primary mouth), separated from the head of pharyngeal gut membrane. Mesenchyme nasal, maxillary and mandibular processes restrict mouth.

The second month of fetal development along the edge of the maxillary processes, produced thickening of the epithelium, which are gradually separated into two plates: outer - from her cheeks and lips are formed and the inside - from which the teeth are formed.

The second month of the jaw bones begin to form. The upper jaw bone is formed of six cores. Five of them are in the fourth month of intrauterine life merge together to form a large part of the alveolar process. From the sixth nucleus develops self intermaxillary bone, which lays the incisors. Each of the palatine bone develops from a single center of ossification.

In the third month of fetal life begins the separation of the oral and nasal cavities, the ninth week of the hard palate is formed, and the twelfth - soft.

When violations of the development process in these periods may occur ugliness as cleft lip, alveolar ridge, hard and soft palate. Of particular importance is the development and mineralization of the intermaxillary bone. She mineralized later. Intermaxillary bone is often still in the embryonic life begins to grow together with the palatal and alveolar bone, but the seam joints of usually persists through adolescence. Therefore, laying and development of masticatory apparatus is closely linked to the formation of the upper respiratory tract. Certain

irregularities in the process even before birth may create favorable conditions for the development of dentofacial anomalies.

The lower jaw at the same time as the upper, develops from calcify mesenchyme, located around Meckel's cartilage. It develops as paired bone, and then the two halves are fused in the first year of life. The front of the Meckel's cartilage ossification and fused with the membrane bone. Cartilaginous areas (regardless of Meckel's cartilage) are also formed in the proximal part of the lower jaw. Through their ossification and fusion with membrane bone formed joint and coronoid process.

Development of teeth begins in time, coinciding with the isolation of the oral cavity from the nasal cavity (5-7 weeks of fetal life). There are several periods in the development of teeth.

First Period - laying and formation germs. The seventh to eighth week buccolabial surface dental lamina along its bottom edge 10 formed cone-shaped protuberances (caps), which are the rudiments of the future enamel of primary teeth. At the tenth week in the enamel organ immediately begins to grow into the mesenchyme in the form of tooth buds. At the same time, on the periphery of the enamel organ condensed mesenchyme cells and form the dental sac (follicle). Thus, the tooth bud is composed of three parts: the enamel organ epithelial, mesenchyme dental papilla and dental sac.

Second period - cell differentiation dental germs. Enamel organ, which initially consisted of uniform epithelial cells, later divided into separate layers. This part of the enamel organ was named pulp enamel organ. Enamel organ cells that laid to the surface of dental papilla, form a layer of enamel inner cells, which are then formed constructed enamel - ameloblast (ameloblasts). The outer layer of the enamel organ epithelial cells and cells of the pulp is converted into the enamel organ enamel cuticle. At the same time, is the differentiation of dental papilla cells, it grow into blood vessels and nerve branches (the third month of embryonic development). Of mesenchyme cells surrounding the tooth bud, formed bone alveolar process.

Third period - histogenesis dental tissues. It begins with a 4 month and takes longer. By 14-15 weeks of intrauterine life through preodontoblasts odontoblasts and begins to form dentin. With further development of the central part of the dental papilla into a pulp.

Enamel formation is a result of the ameloblast. The process of enamel in two stages:

- 1) Formation of organic matrix of enamel prisms with their primary mineralization
- 2) The final calcification of the enamel prisms, which lead to the maturation of enamel.

Mineralization begins at the surface enamel prisms. Each ameloblast becomes enamel prisms, so tooth enamel formed does not have the ability to regenerate (no "spare" ameloblast), except for the ion exchange surface structures through saliva.

Permanent teeth are developing a similar development of deciduous teeth in the same dental lamina. This development begins with the fifth month of fetal life. By the time of birth of each alveolar bone contains 18 dental follicles: 10 - Time and 8 - permanent (incisors, canines and first molars). Laying premolars, second and third

molars occur after birth. End of follicular development period coincides with the tooth to erupt.

Great importance in the formation of the teeth is the process of mineralization. Mineralization buds of deciduous teeth starts at the seventeenth week of embryonic development of the fetus. By the time of birth is almost completely mineralized to funnel-time cutters, 3/4 - fangs and 1/3-1/2 - molars.

Mineralization of deciduous teeth to complete formation of the temporary occlusion is shown in Fig. 1.

In deciduous teeth rarely observed enamel hypoplasia, as the process of development of their bookmarks and is protected inside the mother's body.

Of permanent teeth begins in utero mineralization only the first molar. Processes tab, formation and mineralization of teeth - this is a significant moment in the development of dentition. Mineralization of permanent teeth in Fig. 2.

The development of the jaw bones is influenced by the surrounding muscles: facial, chewing, tongue and floor of the mouth. These determines the uneven development of the jaw bones - the upper and lower (upper jaw two-plus premaxillary bone. common term "upper jaw" must be regarded as provisional. By the end of the second month of fetal development occurs prognathous jaw relationships, as the palatal processes are not yet developed and the mouth is not separated from the nasal cavity, tongue occupies a high position and stimulates the growth of premaxillary and maxillary bones.

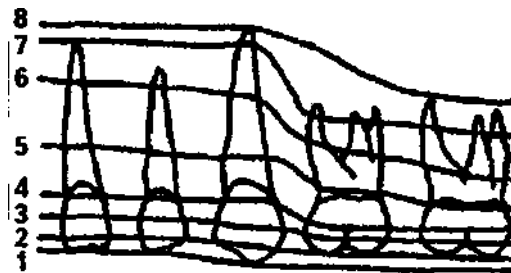


Fig.1 Scheme mineralization time of teeth.1 -7 weeks 2 -8 weeks, 3 - 30 weeks of fetal life, 4 - at birth, 5 - 1 year, 6 - 2 years; 7 - 3 years, 8 - 3.5 years (Pierce, Rauber - Cauch).

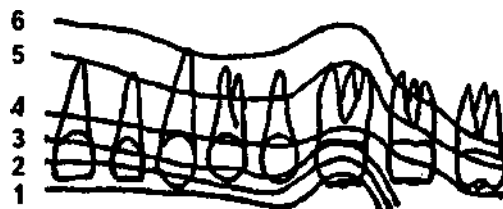


Fig. 2. Scheme of mineralization of permanent teeth: 1 - at the time of birth, 2.1 year; 3-2,5 years, 4-5 years, 5-10 years, 6-13 years (Rauber-Cauch)

After the formation of the hard palate tongue falls to the bottom of the mouth, stimulates the development of the lower jaw, and there

progenital jaw relationships. By the time of birth again formed prognathic jaw relationships. Some authors attribute this to the fact that it is easier to baby's head to pass through the birth path at birth.

Morphological and functional features of the developing dentition in children age.

Respectively mean the upcoming feeding a baby is born without teeth. Specific elements of oral newborn - small lips, gingival membrane expressed palatine transverse folds and fat cheeks litter, allows for efficient sucking movements. Distal position of the mandible and the weak expression of the articular tubercle of the temporomandibular joint, as a new phylogenetic formation, create opportunities to freely advance the lower jaw, which is necessary in the act of sucking. Sucking movements contribute to the development of dental system: jaw, facial, masticatory muscles, and the muscles of the tongue and floor of the mouth. In the process of sucking movements' especially stimulated growth and forward movement of the lower jaw, this gradually leads to the formation of orthognathic bite.

Teething is for certain standards: 1) eruption in certain medium term, and 2) pairing (symmetry) eruption, and 3) the eruption in a certain order, and 4) the sequence of the eruption.

Usually earlier teething on the lower jaw. Terms teething quite variable, although it is possible to define some averages. The average period following the eruption of primary teeth central incisors - 6-8 months, lateral incisors - 8-12 months, first molars - 12-16 months fangs - 16-20 months, second molars - 20-30 months. 2.5-3 years to cut through all the temporary teeth. Their mineralization is complete by 3.5-4 years.

Mineralization of hard tissue of teeth starts on cutting edges (hills) crowns and gradually moves to the root of the tooth. Mineralization of dental tissues normally provided by a number of factors. What matters most is the ability of biological tissues of the teeth in the process, which is due to the selection of the corresponding proteins, enzymes and other biopolymers. Of particular importance is a sufficient amount of calcium phosphate minerals. Their deficiency can lead to the construction of the crystals with imperfect structure - vacant sites in the lattice of hydroxyapatite, or sometimes substituted by ions that do not provide the desired properties of enamel (V.K.Leontev, V.I.Karnitsky, V.G.Suntsov, etc. 1976).

The next important step in the mineralization of teeth is enamel maturation period after the eruption. A special role is played saliva. The degree of maturation of enamel with high accuracy can be determined by the electrometric method (VK Leontiev, G.G.Ivanova, T.N.Zhorova et al, 1988).

The structure of human enamel varies. This is well defined in the study of lifetime solubility of the surface soil. Different teeth and the teeth of one person in general different people differ considerably in terms of solubility. More soluble and less mineralized areas are teeth less washed saliva.

Temporary teeth are different size, shape and color. Form of temporary tooth crown is convex, it is sharply distinguished from the

root. Temporary crowns of incisors and canines are much smaller than the corresponding permanent teeth. Temporary teeth are milky blue. In the second half of the temporary occlusion signs abrasion cutting surfaces of the teeth and tubercles.

Tooth rows of the upper and lower jaw during temporary occlusion have a semi-circular shape. When cutting temporary second molars of the upper and lower jaw to the distal surface of the set in the same plane. Due to the weak intensity of the articular tubercle of the temporo-mandibular joint lower-temporary occlusion almost no sagittal and transversal occlusal curves. Temporary occlusion different ambu- lance wear. In the second half appears abrasion cutting surfaces and mounds of teeth, and the three formed a diastema, the distal surface of the upper and lower second molars are located on the temporary stage, the lower jaw is moved forward, the front teeth are set in direct proportion (shoulder Tsilinsky, W. Zielinsky) (Figure 3). If you violate the uniformity erase teeth may develop progenical jaw relationships.

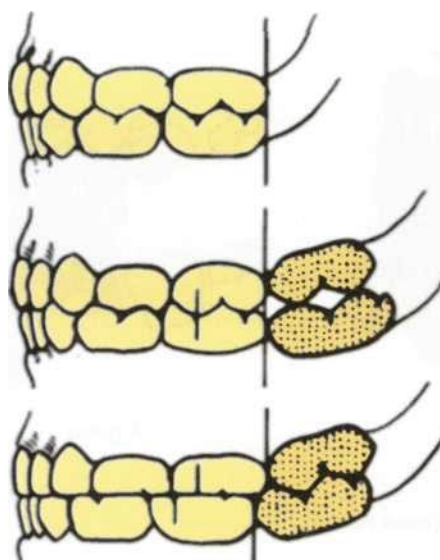


Figure 3 Symptom mesial step (step Tsilinsky).

"Closing the plane" by Bowman and Schwartz

Bowman (1959) concluded that even in severe abrasion of the teeth of the medial temporal shift of the mandible (offset) is not happening. He distinguishes two types of temporary occlusion for the final plane:

- 1 form - when the line is straight, distal surface of the two temporary molars are in the same plane;
- 2 form - a broken line when the upper molars are hanging over the lower, forming a mesial step.

The author believes that this is due to two different sizes of the upper temporary molar. If the dimensions of the latter smaller 8.8 mm, - the final line will be straight. Furthermore, the author says about the stability of sagittal jaw position, thus emphasizing that the three between the teeth and mesial step is nothing more than a normal variant of the norm.

Most professionals support his idea and release 2 versions of orthognathic bite into time periods: 1-intervals and 2-no gaps.

A.M. Schwartz identifies three options in the ratio of the distal surface of the second molars in time form a temporary occlusion:

1: if the upper molar is less than the lower - will be a straight line;

2: If the second temporary molar crowns of the same size - will mesial step;

3: If the crown of the lower molars is more - there is a distal step.

Resorption of roots of deciduous teeth starts at the age of 4 and continues until the last shift of the teeth (12 - 13 years). Since the eruption of the first permanent molars formed removable bite, this is the transition from temporary to permanent dentition. In a removable bite chewing efficiency is reduced. Of particular importance to future viability of the permanent teeth is the process of mineralization. For the first year of life, the child already calcifies bumps crowns first molars and the cutting edge of incisors and canines. In the third year of life begins mineralization premolars. By four years - the second molar. Of particular interest is the development and mineralization of teeth roots. Tooth begins to develop with the crown, and this process gradually moves to the root. Tooth erupt with more immature root development is completed only after 3-4 years after the eruption. By about 10 years completely mineralized roots of incisors and first molars. Mineralization canine root end to 13 years, and the second molar - a little later.

The most important step in the development of occlusion is teething and installation of permanent teeth. There are many theories of teething. One theory explains the process "push" of the tooth root to developing and growing or developing well in the deposition of bone on the bottom cross members.

G. Yasvoin blames teething in the differentiation of dental papilla by turning it into a pulp. The root of the theory contradicts the presence of impacted teeth with formed roots, and pulp - the eruption of the tooth with damaged pulp. For A.Katz theory of eruption important, along with the aforementioned factors, makes adjustment alveolar bone surrounding the teeth teething. Correct and timely eruption of permanent teeth promotes normal resorption of roots of deciduous teeth. Delay resorption of roots of deciduous teeth, especially untreated, leads to disruption of the formation and eruption of permanent teeth, which predisposes to the development of various dentofacial anomalies.

Average terms of eruption of permanent teeth are: first molars - 6-7 years, the first incisors - 7-8 years; second incisors - 8-9 years, the first premolars - 9-11 years; canine - 10-12 years; second premolars - 11- 13 years, second molars - 12-13 years.

During the change of bite are developing temporomandibular joints, which lead to the formation of the sagittal and transversal occlusal curves. Eruption of posterior teeth is accompanied by increased growth of the jaw bones, especially in the lateral parts of the alveolar

process. This changes the dentition: a semicircular shape changes to semi-ellipse for the upper jaw and the parabolic - to the bottom.

In studying the eruption of permanent teeth and the formation of dental arch alignment should distinguish replacement teeth and more. Total length of the dentition of replacement teeth (incisors, canines, premolars) in the upper jaw 0.5 mm longer than the corresponding time of the dentition of the teeth and the lower jaw is 2 mm less than the length of the dentition of deciduous teeth. This leads to the possibility of shifting the first molars of the lower jaw forward and set them in the neutral (fissure-papules) ratio with the upper teeth of the same name. This circumstance determines quite often crowded upper front permanent teeth.

More teeth (permanent molars) are placed through the growth of jaws. The beginnings of the second and third molars of the lower jaw are in the thick of its ramus. A ramus from the front dissipates, and the posterior surface is formed bone. Thus, growth of the lower jaw in length, and have the opportunity molars erupt in the tooth row. On the upper jaw length increases alveolar bone. Alveolar growth in width and the front of the jaw in length is due to the formation of bone on the outer surface of the alveolar process and bone resorption on the inside of the surface. Bone formation is a result of the action of osteoblasts, resorption - osteoclasts. These two opposing processes determine the formation and growth of the jaw bone and, ultimately, the formation of the masticatory apparatus.

Functional anatomy of the masticatory system formed.

Function as the content of life, determines the structure of organs and systems, including, and dental. Claiming with certainty primacy function, remember that a significant inverse effect of shape on the physiology of living organisms. Anatomy of masticatory apparatus described in many textbooks, so we will focus on the issues of the relationship of form and function of dental systems. Among the functional factors should primarily include the pressure force and traction. The most important role in this process is played by chewing (including - floor of the mouth) and the facial muscles and the muscles of the tongue.

Masseterical muscles. Actually m.masseter raises the lower jaw, pushing it forward and moves to his side. M.pterygoideus medialis raises the lower jaw, pushing it forward and moves in the opposite direction. M.temporalis muscle raises the lower jaw, pushes it back and moves in the opposite direction. M.pterygoideus lateralis moves the lower jaw forward, takes her down and in the opposite direction. Anterior part of m.digastricus, pulls it backwards and moves in the opposite direction. M.genihyoideus push down the lower jaw and moves it backward. Oral and sublingual drops the jaw muscle, pulls it backwards and moves in the opposite direction.

Facial muscles. In the development and function of the masticatory apparatus play an important role, only those facial muscles,

which are located in the lower part of the face and surround the mouth slit. The principal of these muscles is the circular muscle of the mouth, the fibers are deposited in the upper and lower lip. This muscle is the sphincter of the mouth, as it promotes the expansion and contraction of the mouth slit. Fibers other facial muscles in this group are woven into the circular muscle of the mouth. These facial muscles are arranged in three layers. The surface layer is represented by a triangular muscle of the mouth (starting at the outer surface of the lower jaw and chin holes woven into the circular muscle at the corner of his mouth, pulls down angle of the mouth), square muscle of the upper lip (starting from frontal process of the maxilla, the buccal surface of the zygomatic bone and the inner edge orbit and ends in the nasolabial folds, raises the upper lip), the zygomatic muscle (starts from the buccal surface of the zygomatic bone, and is woven into the upper lip of the corner of his mouth, picks up the corner of the mouth). The middle layer is presented square muscle of the lower lip (starting from the outer surface of the lower jaw, and is woven into the lower lip at the corner of his mouth, pulls the lower lip down), canine muscle (starts from canine fossa of the upper jaw and is woven into the corner of his mouth, pulls the corner of the mouth upward.) The deep layer is presented mentalis (starts in alveolar roller lower central incisor and woven into the skin of the chin, lower lip pulls ahead), buccinators (starting from the outer surface of the alveolar process of the upper and lower jaw in the molar area and is attached at the side of his mouth, pulls the corner mouth backwards, pressed cheek to the teeth and alveolar bone, forms a side wall arches of the mouth), burin muscles of the upper and lower lips (starting from the walls of the alveolar and the canines are woven into the corner of the mouth above and below, the upper corner of the mouth lifts and the lower - down, both corner of his mouth pulled medially).

Muscles of the tongue. The functions of the oral cavity a huge role in the language. Distinguish muscle, starting with the bones (external muscles) and own tongue muscles. Forward movement provides genioglossal muscle, back - posterior portions hyoid-lingual muscles, down - hyoid-lingual muscles and the middle part of the genioglossal muscle. By his own tongue muscles are the upper longitudinal muscle (making the language shorter and thicker), the lower longitudinal muscle (shortens language), the transverse muscle (making the language is longer and narrower, and participates in compression of the throat and pharynx), vertical muscle (language provides long and flattening).

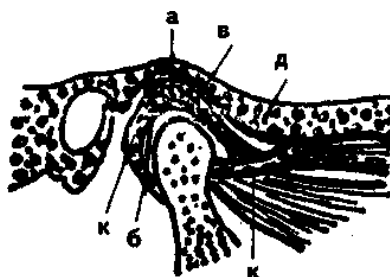
In the development of the jaw bones, especially their alveolar processes, it is essential balance antagonist muscle (raise and lower jaw, displacing it back and forth, left and right). A special role is played by the facial muscles and tongue muscles. If the muscles of the tongue are stimulants of the jaw bones, facial muscles - they act as antagonists. Experimental studies indicate that the equilibrium position of the tooth in the tooth row is a consequence of the forces provided by the muscles of the cheeks, lips, tongue, masseter muscle groups, periodontal tissues, as well as a result of "the growth of these tissues (L.S.Persin, 1996). A.Y.Katz (1939) wrote: "The formation of dental arches and jaws get their pathological deviations not only from certain morphological variations, and functional impairment during the masti-

catory apparatus. Pathological chewing function generates a greater or lesser extent, the gradual deformation of the dental arches and jaws. Therefore, it is useful to put forward a function of masticatory apparatus to a more prominent place in our orthodontic thinking.

Temporomandibular joint.

The elements of the temporomandibular joint are articular fossa articular tubercle and posterior articular processes, joint head of the mandible, interarticular disc, joint capsule and articular ligaments. Consequently, the temporomandibular joint is the crania-mandibular joint (Fig. 4).

At rest articulated only part of the front surface of the articular head with camber on the rear surface of the articular tubercle, articular head moves along the slope of the articular tubercle, which appears only in its infancy to 7-8 months and is made by 6-7 years. Glenoid fossa is 2-3 times greater articular head. Articular surfaces in con-



tact only their bulges, facilitate movement head in different directions. Incongruent temporomandibular joint win in the freedom of his movements, losing power and strength. The head of the articular process of the lower jaw is not only shifted the slope of the articular tubercle.

Fig. 4. Temporo-mandibular joint (scheme): a) the upper-front part of the articular fossa, and b) lower-posterior glenoid fossa, and c) intra-articular disc, and e) the articular tubercle; k) joint capsule

Articular disc is a shock absorber for these complex movements of the lower jaw with the joint capsule, as it creates an artificial, functional elements of the joint congruence. Body of glenoid fossa forms a thin plate of bone that separates the brain from the joint cavity. This proximity of the joint to the temporal lobe of the brain and middle ear creates the possibility of injury when displaced head articular processes of the lower jaw deep glenoid fossa, often to the destruction of the removal of posterior teeth.

In order to correctly and fully understand the function of the temporomandibular joints, and, consequently, the function of the masticatory system, be aware of the changes in the joint. In anthropoids, in contrast, person, joint fossa flatter arch pit thick, head of the joint in the hole is stable, rear joint- process pronounced, articular tubercle is absent. Articular tubercle of the newborn child is almost absent; glenoid fossa is flat and has a rounded shape, operates the entire pit, not only the front part of it. Vault pits thick sagittal and transversal diameters are almost identical. Articular head lies deep in the pit, the disc is not designed and is a tissue that fills the hole in a soft layer between the head and the tubercle, posterior articular process pronounced. To 1.5 years of articular disc is already well developed, deep pit, there is

a more or less pronounced bulge articular tubercle. With the posterior teeth, which take over the function of keeping the height of the bite, the head of the articular process of the lower jaw comes forward from the glenoid fossa and adheres closer to the front wall.

Accordingly, changing the form and function of the temporomandibular joint changes the structure and relationship of dental arches. In appearance chewing surface of the molars is in the same plane. The modern man has sagittal and transversal occlusal curves. Sagittal occlusal curve in the lower jaw - concave, and at the top - arched. Articular sagittal curve path (the path that the head of the articular process of the lower jaw is on the slope of the articular tubercle when moving the lower jaw forward) and sagittal occlusal curve, according to some authors, is the curve radius of the singleton with a common center in the orbit. Absolutely you can safely say that the magnitude of the sagittal occlusal curve (and transversal), depends on the size of the articular tubercle. Bonneville also defines another relationship: the large front teeth overlap, the sharper and more deeply curved dental arch in the sagittal direction. Sagittal occlusal contact curve provides dental arches at the displacement of the lower jaw forward in at least three points arranged in a triangle with the base and the top of the molars on the front teeth. The three contact points resulting from the nomination of the lower jaw forward, are called three-point contact Bonneville. Sagittal occlusal curve formed by 10-12 years.

Along with the sagittal occlusal forms transversal curve which provides contacts dentition with transversal movements of the lower jaw. This curve is formed by the different levels of the buccal and palatal (lingual) cusps of teeth on the upper and lower jaw. In the maxilla posterior crowns tilted to the outside and at the bottom - inside.

For optimum perception of chewing pressure jaw bones according to the direction the load, there are certain principles. In the maxilla, these foundations are called buttresses.

Balancing the pressure developed canines from the top down, is done by the front-nasal buttress, which corresponds to the lateral wall of the nasal cavity, passing into the frontal process. Zygomatic buttress the body rests on top of the zygomatic bone and the zygomatic arch is supported from behind. He takes strength coming from posterior upwards front backwards and inwards from the outside. Pterygopalatine buttress formed cusp of the upper jaw and is supported by the pterygoid process. He takes the pressure from the bottom up and from back to front, coming from the molars. Palatine buttress formed palatal processes. He takes chewing pressure, coming across it.

On the lower jaw are called foundations trajectories. Path from one side of the chin go up the same hill on the other. In the body of the jaw trajectories pass to the bottom of and go up, ending, in part, in alveolar and, in part, at the coronoid process. To go to the coronoid process and the trajectory of the angle of the mandible. Trajectories passing on the falling edge of the jaw, rise up and cross at the articular head. There is overlap and the trajectory going from the coronoid process (V.Yu.Kurlyandsky, 1962). Babies are absent as buttresses, and trajectory. They emerge and evolve under the influence of the increasing complexity of the function. With the eruption of the teeth in the cancellous alveolar around the teeth are arranged radially and fan-shaped bony trabecular so that in either direction of masticatory bone

could withstand this pressure. Such targeted location bone trabecular not to teething and disappears after the loss of teeth,

A significant role in understanding the functional anatomy of the masticatory apparatus is given jaw movements and changes in the relationship with the elements of the temporomandibular joints. Complex biomechanics of the masticatory apparatus are the two main conditions - articulation and occlusion. When opening the mouth, joint head to lower-back part of the joint to rotate about a transverse axis. With a significant opening of the mouth to swivel movements joints slip joint head with the disc down the articular tubercle. At maximum mouth opening only lasts a swivel motion. When moving the lower jaw forward joint head moves forward and down. This forms a sagittal joint path that is relative to the occlusal plane in the middle at an angle of 33 °.

At lateral movements of the lower jaw to the articular head of the muscle makes his way down and forward, leaning inward. Another articular head performs mostly rotational motion, moving up and slightly set back.

Important role in the stability of the masticatory system under load is periodontal, which can be considered as *sindesmosis*. Periodontal gap increases in the direction from the top to the neck of the tooth root and the rate varies from 0.15 to 0.25 mm. Periodontitis is a fibrous connective tissue, consisting of a non-elastic fibers, which are located in different directions at different levels of the wells so that they are firmly fixed in the dental tooth cell. In addition to dynamic, periodontal performs damper, plastic and sensory function.

Complex tissues surrounding the tooth, united by the concept of periodontitis. Proved that periodontal tooth can long endure a double burden. Under physiological conditions, with intact dentition supporting device of each tooth in the processing of food uses only half of its strength. The other half of his reserves, used in orthodontic treatment and dental prosthetics.

Essential role in the function of dentition, especially in sound production, plays sky. The hard palate is composed of the intermaxillary bone, palatine processes of the maxilla and the horizontal part of the palatine bone. With the growth and development of the upper jaw, hard palate of a flat in the fetus becomes a dome in the adult.

The soft palate is a continuation of the hard palate. His skeleton is fibrous tissue (palatine aponeurosis). The main part of the soft palate consists of striated muscle. The soft palate can be divided into anterior, more horizontal and less moving parts and the back, over the moving part. Rear edge of the soft palate defines an opening that leads to the throat, pharynx. From this region on the midline of the tongue hangs down and laterally sky forms a palatal arch limiting laterally pharynx.

From the foregoing it is possible to make a clear conclusion: dental apparatus - a complex system that is undergoing the process of life under the increasingly complex functions significant morphological changes. For illustration the data key age-related changes of human masticatory system (Table 1).

Table 1

Diagram of the major age-related changes of human masticatory system

a sign	the child	an adult	In the absence of teeth
1. Alveolar processes	poorly developed	are well developed	atrophied
2 Buttresses and the trajectory	generated during toothing	well developed	gradually disappear
3. The angle of the lower jaw	more blunt	about 120 - 125 "	more stupid
4. Articular tubercle	Poorly developed	well developed	atrophy
5. Head position in the -	in the depths of the articular	on the slope of the articular	deep in pits fossa
6. Occlusive	mild curves	well defined	—
7. Sagittal angle articular way	less	. about 33	less
8. The most common ratio upper and lower jaws	of prognathic to orthognathic	orthognathic	prognathic

Methods for examination of children with dentofacial anomalies.

Methods for studying children with dentofacial anomalies are very diverse.

First of all, conducting clinical research. Nameplate part helps determine whether the chronological age with tooth and bone. Information on place of birth, residence, nationality population can determine the structural features of dentition. The complaints determined leading motive treatment patient to the orthodontist: aesthetic defect, disruption of chewing, breathing, sound production, etc.

Life history of the disease and helps to find out the causes of dentofacial abnormalities and deformities. First you need to ask in detail about the state of her mother's health during pregnancy, its possible harmful habits, and the admission of certain drugs during pregnancy. Need to find out if there was any birth defect in the baby.

Be sure to inquire about infant feeding practices at 1 year of age. Artificial feeding, along with a general adverse effect on the health of the child, as a rule, leads to the development of dentofacial anomalies. Great importance in the development of the device has maxillo-dental health of the child in the first year of his life. Various common diseases of the child had a very negative effect on the formation of the dentition. Particular attention should be paid to the destruction of teeth due to caries, trauma, inflammatory diseases. Closely monitored the orthodontist must become a way of breathing child. Pathology of upper respiratory tract infections in children has significant distribution adenoid growths, nasal polyps, rhinitis, and deviated septum. All this brings to the difficulty of nasal breathing, and, consequently, to the appearance of the mouth breathing. According prof..Horoshilkina et al (1987) deviated septum, enlarged adenoids (48.5%) on the back of the throat and palato-pharyngeal tonsils (44%), and other chronic diseases of the upper respiratory tract (60 %) are mechanical barriers to nasal breathing. A.A.Pogodina (1955) found a combination of dentofacial anomalies with chronic diseases of the nose and throat in 34% of children, while children with normal occlusion, these diseases are found in only 6%. In normal nasal breathing during rest the tongue adjacent to the palatal surfaces of front teeth of the upper jaw. When buccal same breath tongue position changes dramatically, as it were spread on two of the mouth and adjacent to the teeth of the lower jaw. Upper dental arch without internal support under the tongue and cheek chewing muscles shrink from the sides, longer and protruding. It also creates a negative pressure in the nasal cavity contributes to high ("Gothic") of the sky. By increasing muscle tone suprahyoid lower jaw moves back.

Actually provides special attention to the violation of the musculoskeletal system. With proper posture, head and body are in the same vertical line, but if the baby's head is in front of the body, there is a great likelihood of dentofacial anomalies. Necessarily turns presence of bad habits in the child.

Prof.Okushko (1975) identifies the following bad habits play a significant role in the development of dentofacial anomalies. There are: the habit of sucking fingers, lips, cheeks, tongue, objects, function abnormalities: impaired chewing, swallowing, tongue pressure habit n lips, mouth breathing, poor speech articulation; fixed tonic postural reflexes: incorrect body posture and impaired posture, incorrect position of the mandible and language alone.

Examination of the child in the orthodontic office includes a physical examination, study the structure of the face, a survey of the mouth, teeth, jaw bones, the identification of possible functional impairment.

With the general examination focuses on the patient's physique, physical development, form, hand, head, pronounced nasolabial folds and chin, gaping mouth slit, or an emergence high posterior anterior alveolar process, lips and chin, the shortening of the lower face, mus-

cle tone lip asymmetry face. Simultaneously, palpation. Examines patient gait, posture.

The survey included the patient's mouth to determine the state of the teeth, gums and mucous membranes of the palatum. Learn the location of frenulum upper and lower lips, tongue, palate height, the development of the alveolar process, jaws, size of the apical bases (basal arch), the value of dental and alveolar arches, shape, size and number of teeth, their condition and location in the tooth rows, forms of dental arcs, type of bite.

Clinical function tests (by Illina-Markosian) apply to the differential diagnosis of the displacement of the mandible. They they help set the direction of the displacement and its cause.

At the **first trial** (study of the appearance of a state of physiological rest) identify the facial signs of malocclusion.

In the **second trial** (study of habitual occlusion) offer the patient close his teeth without opening his lips. In the case of the usual displacement of the mandible facial signs of becoming more pronounced shift of the lower jaw, respectively. Mesial or distal displacement of the jaw is determined by the shape of the profile face, side - in the form of his full face.

In the **third trial** (study of the lateral displacement of the mandible) patient is instructed to open my mouth and determine the displacement of the mandible in its lateral displacement side facial asymmetry increases, decreases or disappears depending on the conditions its cause.

When the **fourth trial** (comparative study of conventional and central occlusion) evaluate facial harmony after the lower jaw in the correct position (without the usual bias).

Diagnostic clinical trial on Escher-Bittner used for differential diagnosis of distal occlusion varieties. To this end, remember your face shape in profile with habitual occlusion. Then ask the patient to push the lower jaw forward to neutral ratio of lateral teeth. If the shape of the face at the same time improves, distal occlusion due to underdevelopment of the lower jaw, its distal displacement. If the shape of the face is getting worse, distal occlusion due to a violation of the magnitude or position of the upper jaw. If the nomination of the lower jaw first appearance improves and then deteriorates, the distal occlusion due to impaired growth and development of both jaws.

In the dynamic study identifies over active facial muscles (habitual muscle tension lips and chin as a result of abnormalities in the breathing, swallowing and speech, sometimes the appearance of a "symptom of a thimble") over active intraoral muscles, which are due to increased activity of muscles of the tongue, floor of the mouth and soft palate (promotion of language pathology oropharynx), bruxism. An important step is to study the dynamic movements of the lower jaw. Displacement of the lower jaw due to a number of reasons, such as improper position of individual teeth, temporary teeth indelible cusps, which increases bite seal, addictions, dysfunction of the temporomandibular joints. In the study of TMJ the method of palpation. We study a joint tour heads, determined by pain of the joints. Typical signs

of joint pathology are the noise, crackling, snapping at movements of the lower jaw.

Impaired function of nasal breathing is determined by applying to the nostrils cotton lint and monitoring the deflection during inspiration and expiration.

Violation of swallowing function characterized improper contact with the tip of the tongue oral tissues (push the tip of the tongue on the lower alveolar bone, lower lip and lower teeth), increased activity of facial muscles, especially the chin.

Among the special methods of investigation of children with dentofacial anomalies is particularly important anthropometric study of the head, face, jaws and dental arches. These studies should be started with a study of diagnostic models of jaws. Some authors (F.Ya.Horoshilkina) treat it as a biometric diagnostics in studying models of the jaws.

The study of models of the jaws advisable to carry out, focusing on the three planes. The mid-sagittal plane carried forward point formed by the intersection of the palatal suture with the second transverse palatine folds leading to the canine, and the back point, located on the border of the hard and soft palate, which corresponds to the posterior nasal spine. Because of the possible displacement of the lower jaw to the side. Horizontal plane (Frankfurt horizontal) on the face extends from the tringles of ears to the lower edges of the orbit (infraorbital point). With gnatostat, focusing on it, is made plinth plaster model. The orbital plane is held perpendicular to the horizontal plane, focusing on the infraorbital point. A technique for producing models developed Simon (1916). To this end, he developed a device gnatostat. Pen impression tray for the upper jaw is inserted into the slot tripod, who, through joints attached to the front of the arc. Front arc is oriented in the horizontal plane, respectively, orbital and auricular points. After taking the impression from the mouth to the front of the arc put the cross bar with a moving pointer, sum the bar close to the orbital slots and the signs on the print is applied to the orbital plane. The model is cast on a special stand, which replaces the front of the arc, and thus, the base model will fit the horizontal plane. Sagittal plane corresponds to the vertical bracket.

For the study, the corresponding values of the width of the teeth and dental arches offered various anthropometric methods. The simplest and most informative enough is **Pont** method (1907). He has established an association between the sum of the transverse dimensions of the four upper incisors and dental arch width between the first premolars and first molars in normal:

Premolar index=80

Molar index=64

Practically these indexes are as follows:

Sum of the sizes of 4 incisors. $\cdot 100 / 80 =$ The distance

between the premolars

Sum of the sizes of 4 incisors. $\cdot 100 / 64 =$ The distance

between the molars

I(mm)	P(mm)	M(mm)	I(mm)	P(mm)	M(mm)
27.0	32,5	41,5	32.0	37,5	49,0
27,5	32,5	42,3	32,5	38,2	50.0
28,0	33.0	43,0	33,0	39,0	51,0
28.5	33,5	43,8	33,5	39,5	51,5
29.0	34,0	44,5	34,0	40,0	52,2
29,5	34,7	45,3	34.5	40,5	53,0
30,0	35,5	46,0	35,0	41,2	54,0
30,5	36.0	46,8	35,5	42,0	54,5
31.0	36.5	47.5	36.0	42.5	55.5

The values obtained in the normal structure of the masticatory system is compared with the true values between molars and ,premolar width and make a conclusion about the normal, increase or decrease the width of the dental arch.

Data points in the upper jaw are middle longitudinal fissure premolars and anterior point of crossing of the longitudinal and transverse fissure first molars and the lower jaw - the distal point of the first premolars in contact with the second premolar and the top rear buccal cusps first molars (or top middle buccal cusps at molars). In a removable bite instead of data points taken premolars distal dimples first temporary molars in the upper jaw or posterior-buccal cusps on the lower jaw.

If missing incisors, the calculation can be performed on the sum of the four lower incisors, using data **Tonn** (1937). By Tonn, with constant orthognathic occlusion ratio of the four upper incisors to the sum of the four lower incisors is 1.35.

When bite index may be equal to the norm of 1.23, and with a deep - 1.42.

In temporary orthognathic bite this index is 1.3 (**Z.I.Dolgopolova**).

In the absence of a significant number of permanent incisors can use the following rule: the sum of the width of the crown of the upper permanent incisors by an average of 7.1 mm longer and lower - 5.3 mm. Index described above depends on the population characteristics of the test population Pont research in France. Linder and Harth (1930) recalculated the figures for residents of Austria and Germany.

N.G.Snagina (1965) determined that the width of dental arches of the amount of mesiodistal diameters of 12 permanent teeth. In the first premolars it is 39.2%, and in the first molars - 50.4% of the size of 12 upper teeth.

The length of the dentition is the sum of normal mesiodistal diameters of 10 temporary and 12 permanent teeth. It is measured wire ligature (thick thread) from the distal surface of the first interim or permanent molar on one side to the distal surface of the teeth of the same name on the other. Length of the lower dentition is approximately 87% of the length of the upper teeth.

Korgkhaus (1939) determined the dependence of the length of the anterior segment of the dental arch of the amount of mesiodistal dimensions of the upper four incisors. The length of the anterior dentition is measured from the middle point between the central incisors to the vestibular surface of the crowns to the intersection with a line connecting points at Pont premolars. He compiled a table of the data (Table 2).

In addition to the width and length of the dental arch is crucial to the value of the apical base. For the first time the relationship of dental and basal arches set **Howe** (1952). N.G.Snagina (1965) proposed to measure the width of the apical base in the upper jaw in the pits that are available at the tips of the roots of the canines and premolars (canine fossa) on either side, and on the lower jaw measuring points are located between the canines and premolars, departing from the level of the length of the apical base of the upper jaw is defined perpendicular to the line connecting the distal surface of the first molars to the interdental papilla in heaven between the first incisors in the lower jaw - from the same transverse line to the point of contact between the medial angles crowns first incisors.

Table 2

The length of the anterior segment of dentition (Korgkhaus)

Summary of the width of 4 incisors	Length of the frontal area of upper dentition	Length of the frontal area of lower dentition
27.0	16.0	14.0
27.5	16.3	14.3
28.0	16.5	14.5
28.5	16.8	14.8
29.0	17.0	15.0
29.5	17.3	15.3
30.0	17.5	15.5
30.5	17.8	15.8
31.0	18.0	16.0
31.5	18.3	16.3

32 0	18 5	16 5
32 5	18 8	16 8
33 0	19 0	17 0
33 5	19 3	17 3
34 0	19 5	17 5
34 5	19 8	17 8
35 0	20 0	18 0
35 5	20 5	18 5
36.0	21.0	19.0

S

C

W

When the diagnosis and determine the treatment plan of patients with dentofacial anomalies and deformations is very important anthropometric study of the face.

Taken when measuring the skull using the following key points:

- 1) Nasion-place of the nasal bones with the frontal;
- 2) Prosthion - the place of the front ends of most of the alveolar process of the upper jaw between the medial incisors;
- 3) Infradentale - point forward and upward protrusion of the alveolar region of the mandible;
- 4) Gnathion - most lower front point chin elevation;
- 5) Zigion - the most lateral point of serving the zygomatic arch;
- 6) Gonion - point of the protrusion of the mandibular angle;
- 7) Staphylion - the most posterior point of the posterior nasal spine bone sky;
- 8) Orale - incisive canal between the holes and the back wall of the alveolar of incisors in the midline.

To determine the shape of the face is convenient to use indices.

On average, this index is 85-89,9 (normal). More than 89,9(narrow-faced), less have (broad-face) - (Garson).

Face shape is determined by the facial index in G. Izard IFM (index of facial morphology) (Fig. 5)

The length of a person is measured from a point to a point of the zygomatic arch.

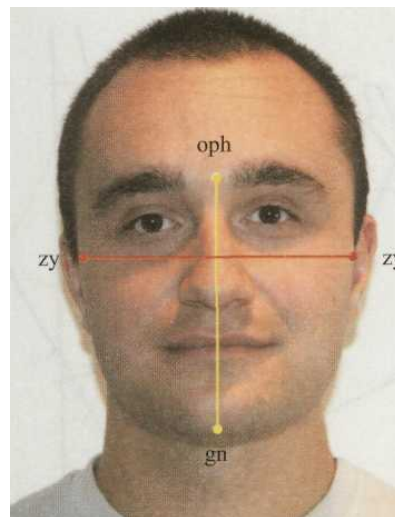
Measure the width of the face between the most prominent points of the zygomatic arch

$$\text{IFM} = \frac{\text{Oph} - \text{gn}}{\text{zy} - \text{zy}} \times 100\%$$

§ narrow face with IFM = 104 and more

§ medium face person in the IFM = 97 -103

§ broad face with IFM = 96 and less



Pic.5.measurement points on the face.

Graphical method of learning the form of dental arches is based on the correlation between the teeth and dental arches. The most widespread use of diagrams **Hawley-Herber-Herbst** (Fig. 6).

To construct the diagram determines the amount of mesiodistal diameters of the two upper incisors and canines. This radius from point B describes a circle of radius AB from point A on the circle segments are laid AC and AO. SAO arc - is the location of the curve of front teeth. To construct the arc posterior diameter of the point E AE carried straight through points C and D to the intersection with the tangent to the circle at A. The receive side of an equilateral angle EFG is the radius of the circle to build a second, which is described from the point O to the extended line AE. From M diameter AM postponed radius AO point J and N. Combining H-point to point C and point J to

point D, a curve of the dentition NSADJ by Hawley. Herbst replaced the lateral branch to direct the arc CN and DP. Centers for these arcs are the points L and K lie on a diameter perpendicular to the diameter of the AM. CN describes arc radius LC, and the arc DP - KD radius. The final shape of the dental arch is represented by curve NSADR. For the lower dentition arc drawn in the same way, but the magnitude of the radius obtained for the upper dentition, reduced by 2 mm. To determine the changes in the shape of dental arch receiving normal arc for a given amount of three front teeth put on the information available to the examinee of teeth. It is convenient to do it with a transparent celluloid plate.

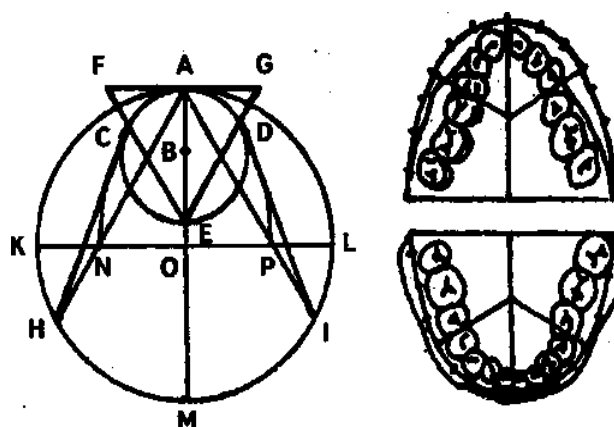


Fig.6. Howley-Gerber-Herbst diagram

Radiological examination methods.

Of radiological examination methods most commonly used intraoral radiography with dental x-ray machines. Being determined by the condition of teeth, their periodontal alveolar and jaw in order to identify congenital and acquired defects, destructive changes, inflammation, cysts, and tumors, determining the presence, status and position of teeth (germs).

Currently widely used gets better way x-rays - a panoramic radiography. Image has a large field of view (displaying dental, alveolar and basal edges of jaws, nasal cavities, vomer, maxillary sinus, zygomatic bones, and branches of the lower jaw). Panoramic radiography is an extra oral method. The image is increased 1.8-2 times. More accurate picture of the degree of mineralization of teeth, the degree of resorption of the roots of deciduous teeth, and the relationship of the roots of deciduous teeth with the rudiments of constant can be obtained using panoramic (panoramic tomography). With this method, we obtain a flat image of curved surfaces.

Radiography of temporomandibular joints in the study of dentofacial anomalies preferable to conduct the procedure Shilleg (1905). Survey conducted with a special tube. At an inclination of 30° to the central ray is directed to the area of the skull on the opposite side of the palm width above the ear canal. On these radiographs can reveal the outline of the joints, their relationship, gross morphological changes.

Tomography of the temporomandibular joints The tomogram sharply and clearly depicted anatomical structures of the selected layer (form glenoid fossa, and its width, depth and severity of the articular tubercle, form joint head, the size of the joint space). At physiological bite joint heads are almost in the middle of the glenoid fossa. With dentofacial anomalies joint head can be positioned in the middle of the articular pits can be moved back and forth or up and down.

Teleradiography (Cephalography). When this technique is X-ray at a distance in order to reduce the size of the distortion of the object. Currently, the distance taken to 1.5 m (Orthodontic Congress in Boston, 1956). To obtain identical radiographs distance should always be the same, the head should be strictly fixed in position by means cephalostat. Contrast to soft tissue facial profile can be midline grease barium suspension. Absolutely necessary to achieve alignment of similar bone structures of both halves of the skull (no asymmetry).

Most information given by cephalometric profile. For the analysis of linear and angular parameters cephalometric to inflict on them a reference point. We look at some of them (Fig. 7).

Point.

A- Most posterior point located at the front base of the apical loop of the upper jaw.

B - Most posterior point located on the front of the apical loop of the basis of the lower jaw.

ANS - the top front of the nasal spine.

RNS - posterior nasal spine.

N - nasion, the front surface nasal-frontal seam.

Se - a point in the middle of the entrance to the sella.

S - A point in the middle of the sella.

C - Condylar, a point on top of the contour of the articular heads.

Gn - gnation, the place of the contour of the lower edge of the lower jaw and the outer contour of the symphysis.

Go - gonion, on the outer edge of the lower jaw in the intersection with the bisector of the angle formed by the tangent to the lower edge of the body and the rear edge of the branches.

Or - the orbital period, the lowest point located lower edge of the orbit,

Pg (Pog) - pogonion, the most anterior point of the chin projection.

Po - porion, the upper ear canal.

Me - menthone, the lowest point on the lower edge of the body of the mandible in imposing symphysis.

Line.

FH - Frankfurt horizontal line passes through the points Po and Or.

N-Se - plane of the front of the skull base, conducted through the points N and Se.

N-A - line between points N and A.

N-in-line between the points N and B.

MP (ML) - the line plane of the body of the mandible between the points Me and GO (mandibular plane).

NL plane between points ANS and RNS (the plane of the base of the upper jaw).

NSL, - the line of the anterior skull base, used to measure the angular parameters, this continuation of the NS.

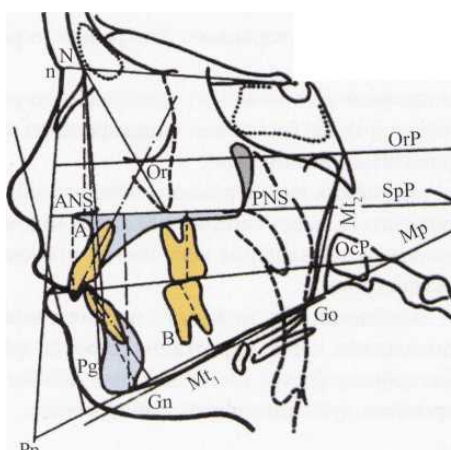


Fig. 7. Cephalometric

In the study cephalometric defined linear and angular size. As a more or less stable reference plane using the anterior skull base (N-Se). Proposed many methods of analysis cephalometric. Very widely used method of Schwarz. Body length of the mandible (the intersection points of the perpendicular from the point to the plane Pg ML (MR) to the point equal to the distance GO N-Se + 3 mm, or refer to this distance as 21:20. Length of the upper jaw (NL) refers to distance N-Se as 7:10.

SNA angle characterizes the position of the upper jaw in the sagittal plane. Normally it is $82 \pm 3^\circ$.

SNB angle characterizes the position of the mandible in the sagittal plane. Long-term average is $80 \pm 3^\circ$.

Increasing the angle SNA associated with forward position her upper jaw, its reduction - with posterior position of the upper jaw (maxillary prognathous and maxillary prognathia). Similarly, the angle determines SNB prognathia mandibular and mandibular retrognathia. NSL-NL angle characterizes the slope of the upper jaw to the anterior skull base. On average, it is equal to $8, 5 \pm 2^\circ$. Increasing this angle indicates retroinklination (slope) of the upper jaw up in the distal. NSL-ML angle characterizes the slope of the body of the mandible to the anterior skull base. On average, it is equal to $32 \pm 2^\circ$. Vertical growth pattern characterized by increased jaw values of this angle and the horizontal - a decrease.

X-ray study of the hands helps to determine the degree of ossification of the skeleton and its corresponding age. The research of ossification of the phalanges, pastern bone and wrist epiphyses radius and ulna. Peak growth jawbone occurs during puberty. Pubertal growth in girls occurs in 12-13 years, and boys - in 14-15 years. This period precedes the onset of mineralization sesamoid bone, which is located in the interphalangeal joints in the interior of one finger tendons. Growth of the jaws almost ends with the full ossification between the diaphysis and epiphysis of the distal phalanx of the third finger brush. Full completion jaw growth occurs when the complete ossification of the epiphysis of the radius.

Functional studies of the dentofacial anomalies and deformations provide a significant part of the objective information. Explored, especially the four basic functions with organ and tissue maxillofacial region. We analyze the most widely used methods.

Chewing function. For research conducted functional chewing efficiency (chewing) of the sample. S.E.Gelman offers the patient to chew 5 g almonds for 50 seconds. Spitting chewed mass, dried and sieved through a screen with standard holes. The balance of the sieve is calculated chewing efficiency. I.S.Rubinov offers 0.8 g nut chew before swallowing reflex. Chewing efficiency is evaluated on two criteria: the balance on the sieve and time chewing. The more residues on the sieve, and the more time chewing, chewing the lower efficiency.

A simple way to study the function of mastication proposed prof..Rubinov called masticaciography. This registers the chewing motion when chewed and swallowed, 0.8 g nuts. Each chewing period has 5 phases. Most chewing efficiency is determined by the duration of the main phase of the chewing function, presence, time of occurrence and nature of loops closure that defines transversal movements of the lower jaw. With good chewing efficiency for the main phase, characterized - chewing rhythm of waves and their equal proportions.

Respiratory function. In order to prevent the development and treatment of many anomalies and deformations maxillofacial system, it is first necessary to normalize nasal breathing. Normalization of nasal breathing very difficult task, as even minor obstacles to it in the upper airways is sometimes an obstacle to the achievement of a good medical effect. This requires the development of reliable, highly accurate method for studying nasal ways, catching minor violations in nasal breathing. Most primitive, the most widely used method is the presentation to wool to the nose. Without a doubt, this method cannot speak of an FIR is quantified.

Known way to assess nasal ways (L.B.Daynyak, N.S.Melnikova, 1960), which was based on forced air through the nose with a constant flow of air. About nasal patency is judged by the level of pressure that when injecting air is measured in millimeters of water. The device consists of a compressor with vibrating electromagnetic drive provides a constant flow of air at the possibility of resistance nasal passages of alcohol gauges, valves control the flow of air, stopcocks gauges and nipples with olives. In normal terrain nasal air pressure, determined by the above rinopnevmometr not exceed 70-90 mm of water column. Side of these advantages, this method has significant drawbacks. The main of which is that when the air at a constant pressure, we can determine only the nasal patency disorders that are associated with gross morphological changes (adenoids, nasal polyps, etc.).

Speech function. Causes dysfunction of the speech can be anatomical and physiological characteristics of speech, hearing, and central nervous system. A special role in the clarity of pronunciation is the structure and shape of the dental system of the palate. N.A.Omelchenko (1961) found a mispronunciation in 33% of children with dentofacial anomalies. Most often mentioned faulty pronunciation

of sounds "p", "l", "c", "sh". The oral cavity (shape of the plate, the position of the teeth) plays a major role, and language, in turn, is the most important body in the formation of speech.

The most informative method for studying the function of speech is palatography - registration contact language with palatal arch and teeth when pronouncing various audio phonemes. To get palatograms produced thin plate dark, close-fitting to the roof, spread talcum powder is introduced into the mouth and pronounce the sound, articulation is investigated. Tongue touching the relevant parts of the plate, washed away in these parts talc. Washed place records show the first point of contact with the air. The plates are photographed and are plotted scheme articulation - palatograms. Then palatograms palatograms surveyed compared with those obtained in people with completely normal pronunciation of sounds (usually speakers). Although there are individual articulation, but serious violations are easy to detect.

Swallowing function. From birth to 2-3 years of a child has a special type of swallowing (sometimes not accurately referred to as "infantile"). At this time swallowing language repelled by serried lips. After the establishment of temporary teeth during swallowing his tongue in contact with the palatal surfaces of the maxillary anterior teeth and the front portion of the hard palate. If after 2-3 years of a child is "infantile" type of swallowing is usually develop dentofacial anomalies (mesial occlusion, open bite, etc.). In this case, the back cover first contrast agent.

A simpler method is to test the functional swallowing. The "normal" swallowing lips and teeth closed, the facial muscles are relaxed. At the wrong swallowing tongue contact with the lips and cheeks, tooth rows not closed, facial muscles tense up until the point foveation in the corners of the mouth and chin ("symptom thimble").

Functional swallowing test is based on a study of the ability of the test to swallow food or liquid lump for some time on the team. In normal swallowing lips and teeth closed, the facial muscles are not tense, seen peristalsis hyoid muscles of the normal swallowing 0, 2-0,5 seconds (rare food - 0.2 seconds flat - 0.5 s). During swallowing the wrong teeth closed, tongue in contact with the lips and cheeks. You can see this if you quickly open your lips with your fingers. When there is difficulty in swallowing compensatory stress facial muscles in the corners of the mouth, chin, sometimes tremble and are closed eyelids, neck stretches and shakes his head. A notable characteristic voltage facial muscles - small indentations on the skin in the area of the mouth corners, chin (a symptom of "thimble"), retracting the lips, cheeks, often seen push her tongue and lips following protrusion.

Clinical functional test by Frenkel designed to detect violations back of tongue and changes its position during orthodontic treatment and verification of long-term results. The sample was performed with specially curved loops of wire. They are made from hard-boiled over the fire a piece of wire with a diameter of 0.8 mm. To establish the back of the tongue in front of the palate produce a smaller loop in the back - more. Arch wire loops prepared to the model of the upper jaw. In the manufacture of smaller loop it round part feature on the middle of the palate on the level of the first premolars, bigger - at the level of the first molars. The ends of the wires are twisted and

have a repeating loop slope of the alveolar process. Then output to the threshold of the oral cavity between the first premolar and the canine. Try on the device in the mouth, giving up his mouth in his corner, arching handle parallel occlusal tooth rows so that its front end was half as long as the posterior. After the introduction of the finished wire loop at the mouth asking the patient to sit still and see to it that the handle does not touch the soft tissues of the face, record its position before and after swallowing saliva. The change in position of the handle is judged on the level of the back touch of the tongue to the hard palate, or a lack of skills to rise. The success of orthodontic treatment to a large extent determined by the normalization of the situation back of the tongue. Experiments carried out by F. Falk (1975), confirmed the need to repeatedly perform such clinical samples during treatment pronounced dentoalveolar anomalies. Data that indicate the status of language, an indicator of a possible discontinuation of treatment time and achieve lasting results.

Linguodynamometry -definition of muscular pressure tongue in the mouth for dental arch with the help of special devices. Swallowing the pressure of tongue on dental arch in Vinders variable: the front teeth - 41-709 g/cm² on the hard palate - 37-240 g/cm², the first molars - 264 g/cm². Tongue pressure on surrounding tissue swallowing team 2 times more than an arbitrary swallowing. Of the pressure distribution on the first arch of the palate depends on its shape.

To determine the involvement of muscles in the act of swallowing, you can use the electromyography. In normal swallowing wave amplitude bio potentials during contraction of the circular muscles of the mouth is small, and in reducing the actual chewing muscles - big. In case of incorrect swallowing pattern is reversed: the wave amplitude prevails bio potentials during reduction of the circular muscles of the mouth.

The study of the functional stage of muscle **electromyography** provides significant information - registration of bioelectric potentials that occur in the muscle at the time of excitation. Method electromyography studies the functional state superficial facial and masticatory muscles of the face. Of masticatory muscles by this method can be investigated properly chewy, temporal and suprahyoid muscles. Electromyography analysis of the shape, amplitude, and values over time. For example, the optimal performance of chewing functions in children aged 12 years are: the duration of chewing period is $15,4 \pm 0,3$ seconds of chewing movements - $23,0 \pm 0,4$ (L.S.Persin, 1996).

Classification and diagnosis of dentofacial anomalies.

Every disease is each person is different. Consequently, there is no disease, there is a sick man. However, something to avoid getting lost in the vast sea of individuals, it is necessary to introduce the classification, allocate some of the phenomena studied. In all classifications competing two extremes: on the one hand the simplicity and compactness of the other - full coverage of the entire pathology versatility.

One of the first classifications of relevance to the present day has been the classification of Angle (1889). The basis of his classifica-

tion Angle put the location of the first molar of the upper jaw. According to him, the first molars of the upper jaw is always in a fixed place, and all changes are due to the movable lower jaw. Key occlusion called Engle ratio of upper and lower first molars.

Angle identified six types of anomalies of individual teeth and three classes contact first molars (Fig. 8).

At the first class, mesio-buccal cusp of the first molar of the upper jaw is in distal fissure of the first lower molars

In the second class fissure of the first lower molar is located behind the mesial-buccal cusp of the upper first molars, and in the third grade fissure lies ahead mesial-buccal cusp of the first molar. The second class is divided into two subclasses:

- 1) The upper teeth are tilted in the direction of the labial (protrusion);
- 2) The upper incisors are inclined palatal direction (retrusion).

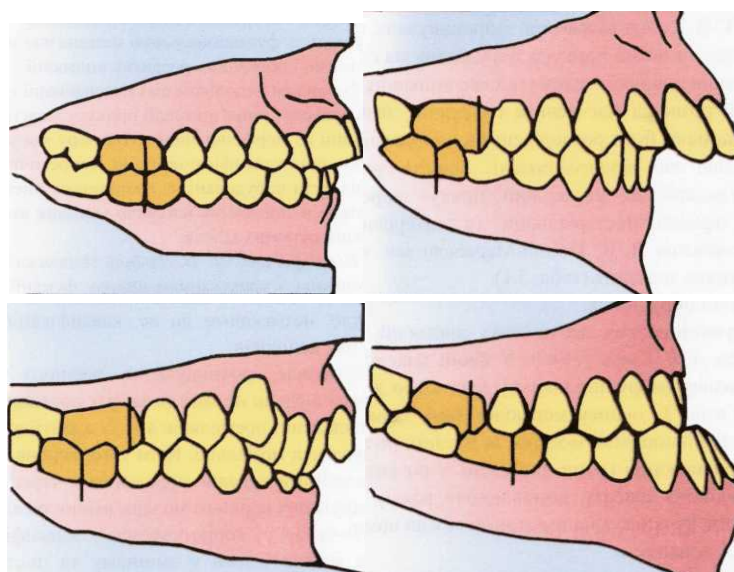


Figure 8. The classification of malocclusion Angle

In addition, the kinds of anomalies identified Angle position of individual teeth: labial (buccal) occlusion, lingual occlusion, occlusion of the medial, distal occlusion, out occlusion, infra occlusion, supra occlusion. The main advantage is its classification Angle extreme simplicity with a clear definition of the basic link relationships of dentition (the so-called "key occlusion"). However, the inherent disadvantages of this classification can now use it only for preliminary orientation diagnosis. The main disadvantages of this classification are:

- 1) First molar of the upper jaw is not always permanent (especially at an early removal of temporary teeth);
- 2) The upper jaw may take a different position in the skull, which will affect the position of the upper first molar;
- 3) The classification takes into account only the changes in the sagittal direction of bite;
- 4) The classification cannot be applied in the absence of first molars (in the period of temporary occlusion of the teeth, with their destruction and removal.)

CLASSIFICATION by Kalvelis

D.A.Kalvelis divided the dentofacial anomalies in three sections:

- 1) Anomalies of individual teeth
- 2) abnormalities of dentition
- 3) abnormalities of occlusion.

I. Anomalies of individual teeth

- 1) The anomalies of the teeth:
 - a) Adentia - partial and complete;
 - b) super complete teeth.
- 2) Anomalies in the size and shape of the teeth:
 - a) Giant teeth;
 - b) Thorns shape teeth;
 - c) Ugly teeth (Hutchinson, Fournier).
- 3) Anomalies structure of hard dental tissues:
 - a) Hypoplasia of dental crowns.
- 4) Violation of the teething process:
 - a) Premature teething;
 - b) Delayed emergence.

II. Anomalies of dentition

I. Violation of Education dentition:

- 1) Anomaly position of individual teeth:
 - a) labio-buccal dentition;
 - b) The palato-lingual dentition;
 - c) Mesial dentition;
 - d) Distal dentition;
 - e) The lower position (infraocclusion);
 - e) Highly position (supraocclusion);
 - g) The rotation of the tooth (torthoanomaly)
 - h) The transposition of the teeth;
- and) vestibular upper canines.
- 2) The position of the teeth crowding.
- 3) THREE between teeth (diastema).

II. Anomalies form of dentition:

- a) The restriction of dental arch;
- b) Saddle strangled dentition;
- a) U-shaped dentition;
- d) Square form of dentition;
- e) Asymmetric dentition.

III. Malocclusion

I. Sagittal bite anomalies:

- 1) Prognathia;
- 2) Progeny:
 - a) False progeny;
 - b) The true progeny.

II. Transversal occlusion anomalies:

- 1) Narrowed tooth rows;
- 2) Discrepancy width of upper and lower dental arches:
 - a) Violation of the ratio of lateral teeth on both sides (bilateral cross bite);
 - b) Violation of the ratio of lateral teeth on one side (oblique or unilateral cross-bite).

III. Vertical bites abnormalities:

- 1) Deep bite:
 - a) Overlapping bite;
 - b) combined bite with prognathia (box- form).
- 2) Open bite:
 - a) True open bite (rachitic);
 - b) Traumatic occlusion (due to bad habits).

Despite the fact that the classification D.A.Kalvelis large enough, it could not contain the many anomalies associated with the size of the jaw bones and does not represent the level at which a pathology (jaw-bone position, alveolar process and tooth rows).

Classification Betelman

All anomalies dentition divided them in position of individual teeth anomalies and anomalies of articulation. Articulation anomalies are considered in three areas: the sagittal, vertical and transversal. In the sagittal direction different anomalies of two types - distal and mesial bite, vertical - open and deep bite, and on transversal - unilateral and bilateral oblique bite.

Distal occlusion is divided into the following four forms:

- 1) Lower micrognathia,
- 2) The upper macrognathia;
- 3) The upper macrognathia and lower micrognathia;
- 4) Maxillary prognathia with compression in the side panels.

Mesial bite is three forms:

- 1) Upper micrognathia;
- 2) The lower macrognathia;
- 3) The upper and lower macrognathia micrognathia.

The **World Health Organization** recommends the following classification of dentofacial anomalies.

I. ANOMALIES SIZE JAW

- 1) Macrognathia upper jaw.
- 2) Macrognathia lower jaw
- 3) Macrognathia both jaws.
- 4) Micrognathia upper jaw.
- 5) Micrognathia lower jaw.
- 6) Micrognathia both jaws.

II. ANOMALIES OF THE JAWS in the base of the skull.

- 1) Asymmetry.
- 2) Maxillary prognathia.
- 3) Mandibular prognathia.
- 4) Maxillary retrognathia.
- 5) Retro position of mandibula.

III. RATIO ANOMALIES arches

- 1) Distal occlusion.
- 2) Mesial occlusion.
- 3) Excessive overlap (horizontal overlaps bite).
- 4) Excessive overlapping bites (vertical overlapping bite).
- 5) Open bite.
- 6) Cross-bite posterior teeth.
- 7) Lingual occlusion posterior mandible.
- 8) The shift of the midline.

IV. ANOMALIES OF TEETH

- 1) Overcrowding.
- 2) Move.
- 3) Rotation.
- 4) The gaps between the teeth.
- 5) Transposition.
- 6) Retention.
- 7) Other.

V. Maxilla-facial anomalies functional origin

- 1) Improper closing of the jaws.
- 2) Violation of swallowing.
- 3) Mouth breathing.
- 4) Sucking the tongue, lips and fingers.

VI. Diseases of the temporomandibular joint

- 1) Syndrome Bone.
- 2) Pain dysfunction syndrome joint.
- 3) Joint laxity.
- 4) Clicking the joint.

WHO classification of the most complete includes a variety of dentofacial anomalies. It considers the size of the anomaly at the level of the jaw, dental arches and the relation of the teeth.

The diagnosis must conform to the laws of the theory of knowledge. Norma includes pathology as its opposite. So the doctor on the basis of subjective and objective data must match the diagnosis with the dialectical position, as it is difficult to distinguish between normal and disease. The term "disease" should be included morphological changes, functional and aesthetic violations. It is extremely important to have a holistic view of the dentition, the body as a whole, the relationship with the environment, about the ontogeny and phylogeny. The physician must penetrate deeply into the cause-effect relationship study pathology. Dentofacial anomalies as the disease determines the following: they come under the influence of extreme stimuli internal and external environment, characterized by a decrease in the dental system adaptability to the environment, at certain stages of development are a manifestation of the mobilization of the body's defenses are the result of an imbalance with the environment. The process of knowledge of the disease consists of the following stages: the accumulation of facts, their logical comprehension, abstract thinking and proposing hypotheses or theories, checking in practice the theoretical arguments and hypotheses (F.Ya.Horoshilkina, 1982).

Myogymnastics- a method of prevention and treatment of dentofacial anomalies.

Dentofacial anomalies and deformations much common in children, aided by various hereditary, congenital and acquired factors. Statistics on the prevalence of dentofacial abnormalities and deformities range from 11 to 72%. According F.Ya.Horoshilkina (1982) dentofacial anomalies and deformations occur in our country, on average, 33.7% of children. Among the factors that lead to the development of dentofacial anomalies and deformities, particularly important are genetic factors, disease, pregnant women, and various somatic diseases child, artificial feeding, tooth decay, bad habits, anomalies bridles lips and tongue, impaired abrasion of hard dental tissues, upper respirato-

ry paths, etc. The main features are broken dentition, among which are the following:

1) Violation of the nasal breathing is manifested in the form of mixed or mouth breathing. Violation of this feature is due to diseases of upper respiratory tract (a deviated septum, chronic rhinitis, adenoids, etc.), functional impairment of the circular muscles of the mouth caused by prematurity, birth complications, severe somatic diseases at an early age, abnormalities of the frenulum of the upper lip and other reasons (Yu.L.Obraztsov, 1990).

2) Violation of swallowing function due to prolonged sucking nipples, late inclusion in the diet of solid food, delayed eruption of primary teeth, bad habits, and tongue-tie.

3) Violation of the chewing appears sluggish, a habit of chewing on one side or on the front teeth. Causes of the violation of this function can be mouth breathing, and later included in the diet of hard food, severe child, dental caries, and processes of abrasion of hard dental tissues.

4) Violation of speech occurs when different strains of the sky, anomaly of the the teeth, tongue-tie.

Impairment of the function, on the one hand, it is a consequence of dentofacial abnormalities and deformities, and on the other - the reason for their occurrence.

Possibilities of self-regulation of dentofacial anomalies are rather limited. Thus, according to F.Ya.Horoshilkina, self-regulation is observed for an average of 11% of the subjects.

On the basis of the above, it must be concluded that the majority of children with dentofacial anomalies and distortions, need orthodontic treatment. A significant number of children are turning to the orthodontist with severe dentofacial anomalies and deformities that require long-term (months, years) instrumental treatment. For the year orthodontist can finish the treatment of about 100 such patients (G.N.Troyansky, M.Z.Mirgazizov, 1980). Without a doubt, with a staff of orthodontists cannot cope with the huge volume of work.

SIGNIFICANT Myogymnastics

Conducting classes on myogymnastics must comply with the basic pedagogical principles - systematic, coherent, consciousness and activity, accessibility and personalization, repetition and progression of visibility (V.D.Molokov, V.G.Vasilev, V.G.Izatulin et al, 1991) .

ground rules for the following: Myogymnastics

- 1) Muscle must be performed with the maximum amplitude;
- 2) The intensity of muscle contractions should not be excessive and should be within physiological limits;
- 3) The rate and duration of the rate should increase gradually;
- 4) Between two successive cuts must be a pause equal to the duration of the contraction;
- 5) Muscle during each exercise should be repeated several times, and continue until the light of the local fatigue;
- 6) the most favorable age for myogymnastics - 4 to 7 years.

Myogymnastics exercises appointed without special apparatus or devices (disk Friel, individual and standard vestibular plate ekviliberator, hand spinner, activator, etc.). The greatest distribution of special devices have vestibular plate (standard and custom). Both of

these forms of vestibular plates have drawbacks. Standard plate is available in three sizes, which is natural enough for the diversity of the masticatory apparatus in children of different ages. Manufacturing individual plates cumbersome can be made only in the hospital. We are preparing the vestibular plate on the standard models that we get from children with normal structure of the masticatory apparatus.

Work on prevention of dentofacial anomalies and deformities, including holding myogymnastics, carry an orthodontist, a district pediatric dentist with medical and teaching staff of pre-school institutions and schools.

The principle of preventive direction against dentofacial anomalies and deformities significantly reduces labor costs, contributes to the harmonious development of the younger generation and is fully consistent with the basics of humane care. Myogymnastics is one method of achieving these goals.

Each complex consists of a total of several small systems that can include these exercises in the routine physical education classes, speech development, mobile games, without the need for special allocation of time. In drawing up the complexes depending on their age

I. Myogymnastics complex exercises for prevention and strain dentofacial anomalies

(For younger and middle groups)

1) Exercise for the normalization of respiratory function (performed on the morning exercises, physical education classes, while walking).

Starting position: the state of the correct posture - head and torso to keep straight, shoulders slightly laid back and a little left out, chest expanded, blade adjacent to the back, abdomen and knees pulled up straight.

Exercise number one, full breath. Long breath through his nose. During inhalation, the stomach "inflated" and expands the chest. When you exhale (through the nose) opposite first decreases breast volume, and then retracts the stomach.

Exercise number 2. Thoracic breathing. Exhale. Make a long breath through his nose. At this time the chest expands, and the stomach is pulled. When you exhale (through the nose) - on the contrary.

Exercise number 3. Abdominal breathing. Exhale. Make a long breath through his nose. At this time, the stomach bulges. When you exhale (through the nose) - the stomach is pulled.

Exercise number 4. Skill fully extended expiration. Walking at a moderate pace. Inhale and exhale only through the nose. 3 steps to a breath, step 4 - exhale. After 3-4 days, the duration of exhalation should be increased by one account (5, 6, etc.).

Exercise number 5. Inhaling and exhaling alternately one nostril (the other nostril with a finger tight).

2) Exercises to strengthen the pharyngeal muscles (Performed at the morning exercises, physical education classes).

Starting position: back straight, hands on his belt.

Exercise number 1. Alternately as head tilt back, tilt forward.

Exercise number 2. Tilt the head back. In this position, alternately tilting your head to the right and left shoulder.

Exercise number 3. Tilt the head back into position alternately turn his head without dropping chin to the right, then left.

3) Exercises for the normalization of closure

Lips (performed in the classroom for the development of speech.)

Starting position: sitting in front of a mirror, keep your head straight, shoulders slightly laid back and a little left out, chest expanded, knees bent, feet together, heels together, tummy tucked.

Exercise number 1. Lips pulled forward, closed, picture tube, wide stretch.

Exercise number 2. Lips pulled forward, closed, draw a horn proboscis.

Exercise number 3. Close his lips, cheeks inflate slowly squeeze the air with his fists through pursed lips.

Exercise number 4. With the effort to blow air flow ("wind blows", "put out the candle," "make a storm," etc.).

4) Exercises for the muscles of the tongue and the normalization of the type of swallowing (performed in a group of speech in the classroom.)

Starting position: sitting in front of a mirror, holding his head straight, shoulders slightly laid back and a little left out, chest expanded, tummy tucked up, knees bent, feet together, and heels together.

Exercise number 1. "Clocks." Mouth open, tongue makes slow circular motion on the upper lip, then the lower lip.

Exercise number 2. "Punish naughty tongue." Put the language on the lower lip; slap him on the upper lip "on-on".

Exercise number 3. "Let's paint the ceiling." It's time to paint the room, invited a painter, he comes to the old house with a new brush and a bucket. Your tabs - brush, hard palate - the ceiling...

Exercise number 4. Display job jackhammer. Dddd ...

Exercise number 5. "Horsemen." Sit astride a chair and wide open mouth, tongue clicking.

II. Myogymnastics complex for prevention and strain dentofacial anomalies

(For older children and preparatory groups)

1) Exercise for the normalization of respiratory function.

The exercises № 1-5 last set me (1).

Exercise number 6. Exhale. Nose pinch fingers. Aloud slowly count to 5, and then take a deep breath and exhale through the nose.

2) Exercises to strengthen the pharyngeal muscles.

The exercises preceding the complex I (2).

3) Exercises for the normalization of closure

lips. Do exercise 1.3 previous complexes I (3).

Exercise number 4. Lips are closed, then move them to the right and turn left.

Exercise number 5. Lips are closed; inflate the air under the upper lip, then under the lower lip.

Exercise number 6. Bent little fingers to put in the corners of the mouth, lips do not close, fingers slightly dilated in hand, lips are closed.

Exercise number 7. With the effort to blow air flow ("wind blows", "put out the candle," "make a storm," etc.).

4) Exercises for the muscles of the tongue and the normalization of the type of swallowing.

Do exercise 1.5 previous complexes I (4).

After mastering the children of these exercises can be incorporated into training exercises more challenging.

Exercise number 6. Language to lift up, to press to the front section of the hard palate in the palatal folds. Clench your teeth, swallow saliva, fixing the position of the tongue.

Exercise number 7. Tip of the tongue pick up, place it in the front portion of the hard palate. Move the first arch of the hard palate as possible back to the soft palate.

Exercise number 8. Tip of the tongue pick up, place it in the front portion of the hard palate. Move a language to the palatal surfaces of the teeth on either side, touching each tooth.

5) exercises to train the muscles that raise the lower jaw.

Exercises are performed at a slow pace on the 1 - 2-3-4 from 5 to 10 repetitions.

Exercise number 1. Lips closed, teeth clenched. Increase pressure on the teeth reduced masticatory muscles.

Exercise number 2. Open your mouth, place the index and middle fingers on the teeth and side portions of the lower jaw. Cover your mouth, resisting pressure from the hands. For this exercise, you can use a wooden stick to put on her rubber tube.

III. Myogymnastics complex for distal bite treatment.

1) Exercise for the normalization of the respiratory function of complex I (1) and II (1).

2) Exercises for the normalization of closing of the lips of the complex I (2) and II (2).

3) Additional special exercises.

Exercise number 1. Jaw slowly rises up until the cutting edges of the lower incisors in front of the set are at the top. In this position the lower jaw to hold for 10 seconds, then slowly set the initial position.

Exercise number 2. Perform the same exercise with the first turn of the head to the right, then left. Load increases during exercise while standing. Throws back his head slightly back, slowly push the lower jaw forward as long as the lower incisors will install front upper.

Exercise number 3 (the vestibular plate). Vestibular plate put in the vestibule of the mouth, one finger of her right hand stretched forward for the ring and keeps tight-lipped.

Exercise number 4. Lay between the lips of the strip of paper folded in half and squeeze the lips. Hold the paper up to 30 - 50 minutes during quiet games, drawing, reading, or when a child watches television.

Exercise number 5. The previous activity, replacing the paper strip metal disc with a diameter of 2.5-3 cm and a thickness of 1.5 mm and a weight of about 6.5 g Sandwiched lips disc should be positioned horizontally, you must make sure that the disk is clamped his lips only, not teeth. The exercise is performed until exhaustion (from 30 seconds to several minutes).

Exercise N ° 6 (with a plastic plate). The child grasps the edge of the lips of the plate thickness of 1-2 mm, a width of 30-35 mm,

60-120 mm in length and holds it in a horizontal position. The plate imposes any burden. The increase in load causes increased compression of lips.

Exercise number 7. Small cotton rolls lay in transitional fold vestibule of mouth on both sides of the frenulum of the upper lip. Close his mouth and say a number of phrases containing labial sounds ("b", "m", "n").

IV. Myogymnastics complex for deep bite treatment

Exercise number 1. Lower jaw to slowly push forward until the cutting edges of the lower incisors in front of the set is at the top. In this position the lower jaw to hold for 10 seconds, then slowly set the initial position.

Exercise number 2. Put on a wooden stick a rubber tube, lay between the front teeth, clenched and unclenched his teeth. According to the indications to include other exercises of the previous systems.

V. Myogymnastics complex for mesial bite treatment

1) Exercise for the normalization of respiratory function (Complex I (1) and II (1)).

2) Exercises for the muscles of the tongue (the complex (4) or II (4)).

3) Additional special exercises.

Exercise number 1. Tip of the tongue to press the palatal surfaces of the maxillary anterior teeth to muscle fatigue (3-5 min).

Exercise number 2. With slightly upturned head alternately open and close his mouth, closing his mouth to try to get her tongue back edge of the hard palate.

Exercise number 3. Clamp the upper front teeth, the lower lip, hold, then release it.

Exercise number 4. Open your mouth, slowly close it by moving the lower jaw back and placing his front teeth in the edge closing. Lower jaw to hold in position 8.4 seconds.

Exercise number 5 (with a wooden spatula.) Placed between the dental series spatula (width is the width of the upper incisors). Bite spatula so that the pressure on the palatal surfaces of the upper teeth and contribute to the deviation in the vestibular direction, and the lower incisors - in speaking.

VI. Myogymnastics complex for open bite treatment.

Exercises to train the muscles that raise the lower jaw (complex II (5)).

According to the indications - other exercises of complex I and II (in violation of the respiratory function, swallowing, and the circular muscles of the mouth).

VII. Myogymnastics complex for cross bite treatment.

According to the indications - exercise of complex I or II. Additional special exercises:

Exercise number 1 (the displacement of the lower jaw to the side). Maximum mouth open, move the lower jaw into the correct posi-

tion, close my teeth and hold in this position the lower jaw 4-5 seconds.

Exercise number 2 (with one-sided constriction of the upper jaw). Tip of the tongue to press the palatal surfaces of the upper teeth and the alveolar bone on the side of the restrictions in a few minutes.

After each set to pause as relaxation exercises:

Exercise number 1. "Hand in hand, fist unclenched and on the flank."

Exercise number 2. "To grow faster, rise up more feasible."

Exercise number 3. "Mom must rest, my mother wants to sleep, I did not wake up, I go on tiptoe," etc.

Apparatus treatment of dentofacial anomalies. Orthodontic appliances mechanical, functional and combined action.

One of the main types of orthodontic treatment is an instrumental method. There are various classifications of orthodontic appliances. First of all, they should be divided into preventive, curative and retention.

F.Ya.Horoshilkina and Yu.M.Malygin (1977) with the biophysical principles of operation and design features have given a detailed classification of orthodontic appliances. In principle to distinguish three groups of devices: mechanical action of functionally active and combined (combined) action. Functional-acting, in turn, is divided into functional rails and, in fact, functionally active. According to the method and location of the units allocated one jaw, one jaw rostral actions two, extra oral, combined. According to the type of support: interacting and stationary. At the location appropriate to allocate devices intraoral oral, vestibular, extra oral head, neck, jaw and match. By way of fixing: Fixed, mobile, and combined. By type of construction machines are arc, plate, block, and frame.

APPARATUS PREVENTIVE action aims to eliminate or weaken the effect of adverse factors leading to the development of dentofacial anomalies (sucking habits, improper position of the tongue, mouth breathing, etc.). To preventive apparatus is necessary, first of all, include vestibular plate (standard or customized), which are used in bad habits and mouth breathing. You can add a record to the vestibular flap language, which is located in your own mouth, in the third and fourth teeth or "pearl", located on the border of the hard and soft palate. These additional devices contribute to the development of language proper position (Fig. 9).



Fig. 9. Vestibular plate with damper for tongue and a "gem"

Medical devices achieved normalization of the structure and function of the masticatory apparatus strain. Objectives to achieve ideal occlusion are:

- a) Class 1 molar relationship by Engle;
- b) The maximum fissure-cusps contact;
- c) The absence of the central and lateral slip;
- d) The absence of premature contacts;
- d) None of the gap sagittal, slight overlaps.

It is desirable to have a perfect occlusion adequately location in space of skull and face (add two rules):

- a) Normal smile line (maxillary incisors touch the red portion of the lower lip without baring gums);
- b) A line parallel to the interdigitation cusps line.

It is also desirable when determining treatment goals tailored to the individual and ethnic features.

In the study of models of the jaws, obtained from people with completely normal structure maxillofacial apparatus **Larry Andrews** in 1972 identified **six keys of normal occlusion**:

1. Molar relationship:

- a) The distal surface of the distal edge of the upper first molar forms contact with the mesial surface of the second molar mesial edge of the lower jaw. It. molars give some inclination in relation to the occlusal plane;
- b) Mesial buckle protuberance of the upper first molars should be in the groove formed by the mesial and middle hill of the first molar of the lower jaw, as described Engle;
- c) Mesial lingual cusps of the upper first molar should be located in the central fossa of the lower first molar;
- d) Top canines of the upper jaw are slightly mesial Canines-premolar gap.

2. Crown angulation is defined as the deviation of the long axis of mesiodistal crown of the perpendicular drawn to the occlusal plane (degrees). A positive number incisive part of the crown is more medial than the gingival portion. With a negative - on the contrary, the gingival portion of the crown is mesial incisal. The deflection angle is different for each tooth, but normal occlusion rates deviations crowns always positive.

3. Crown inclination (Torque) - anterior-posterior (palatine) deviation crown. This is the angle between the perpendicular to the occlusal plane and the tangent to the midline labial or buccal surface of the crown. A positive value indicates that the tangent labial or buccal lingual rejected (palate), a negative value indicates a labial or buccal deviation. In normal occlusion maxillary incisors have positive inclination crowns, all other teeth - negative.

4. Rotation - rotate teeth. In normal occlusion rotation is absent. Any rotation of the maxillary violates harmony as during rotation posterior occupy more space in the mesiodistal direction, and when you rotate the front - less.

5. Close contact between the teeth. If there are gaps between the teeth at the normal size of the teeth, they must be removed. If the

gaps between the teeth depends on the size of the teeth disorders, their removed not advisable, because this may affect the occlusion.

6. The curve of Spee. On the line between the most prominent cusps of the lower second molar and lower central incisors should not be deeper than 1.5 mm. excessively deep curve of Spee can cause a relative decrease in length of the upper dental arch.

Achievement of the six keys of occlusion - is an ideal goal of orthodontic treatment, the problem is quite simply not doable.

Mechanically-operated (active) devices - these devices, in which the force inherent in their design (screw, alloy, spring, arc, rubber ring, etc.). The load regulates physician.

Extra oral example of mechanically operated device is the chin sling with head cap and a rubber rod (Fig. 10).



Fig. 10 chin sling with head cap and rubber traction

Basically, this device is used in the 4-7-year old to delay the growth of the lower jaw and shift it back in mandibular macrognathia and mandibular prognathia.

Intraoral mechanically operating units can be fixed or removable.

Start designing non-replaceable units put Fauchard (1776), tying a ligature to the teeth metal arc.

Founder of modern technology is non-removable orthodontic American **Angle**. In 1886 he proposed a universal arch device, which attaches to the teeth wire ligature. The apparatus consists of a steel arch with a thread on the ends to which the nuts are screwed. End-points are introduced into the tube soldered to metal crown (ring), to be worn on the molars (Fig. 11).

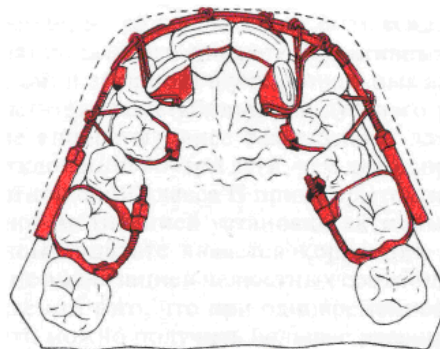


Fig.11. Universal arch of Angle.

In operation, Engle refused immediate fix to the teeth of the arc, and it was fastened to the locks, which are soldered (welded) to the rings, get dressed to the teeth.

In the future, have been proposed various modifications- Simon, Ainsworth, Mershon, Lurie, Johnson, Begg etc.

Currently, the most widely used arc apparatus is fixed to the teeth with interlocking devices (braces). This is the so called «edgewise-technique». Braces consist of slot located on the front surface of the castle, the wings, with the aid of which the fixing of wire or elastic ligatures, spanning an arc from the outside, a support platform that allows the bracket is attached directly to the tooth with composite material or welded to the orthodontic ring (Fig. 12) .

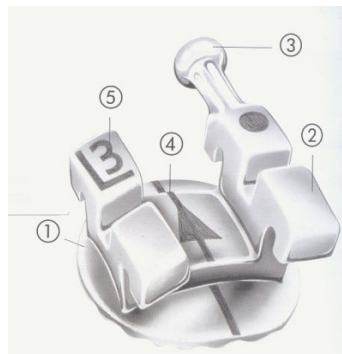


Fig. 12. Locking device (bracket).

Arch wire made of gold, steel, Chrome cobalt, titanium, molybdenum alloys and titanium alloys and nickel (shape memory alloys). Used an arc round and rectangular arch.

Currently, the most widely adopted technique of direct arc. In this case, use special locking devices - braces:

1) Each bracket corresponds to a specific group of teeth selected corner of the working slot bracket with its respective tilt and turn refers to a specific position of the tooth in the tooth row;

2) The base of each bracket has a well-defined thickness (the distance from the base of the slot bracket to the inside surface of the supporting platform). In this case, orthodontic tooth movement acting force arc occurs "automatically" without performing a variety of bends and loops in wire arc.

A large variety of mechanically operated removable intraoral orthodontic appliances. Typically, this record with a variety of active elements: vestibular and lingual arch, springs, levers, screws, and orthodontic etc. In addition, in combination with fixed devices are widely used rubber ring. Fixed removable intraoral appliances diverse clasps: one shoulder holding, CO Jackson, swept-Schwartz, Adams clasp, bellied, etc. Fig13.

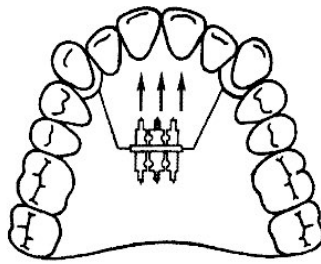


Fig. 13. Plates for transversal expansion of the dentition (a), sagittal elongation (b), the displacement of the lateral vestibular tooth (c), posterior displacement of the vestibular (r)

Functional apparatus vanes are based on inclined or bite plates. Pioneer in the development of these vehicles was our compatriot AJ Katz. Bite guards plate consists of a base, which is tight to the roof only in the back of, and in the front third is from the hard palate, of CO clasps (hooks) in the upper front teeth and the ramp leading to the lingual surfaces of the lower front teeth (Fig. 14). The device is used in two classes 1 subclass Angle in combination with a deep bite.

An example of proper functional vestibular apparatus is operating record, the so-called shield therapy. Shields-plate placed between the lips and cheeks on the one hand, the teeth and the alveolar process - on the other. They regulate the action of the tongue muscles and facial muscles, facilitating myo balance.

Apparatus combined action combine elements of mechanical and functional appliances



Ris.14.Bite plate Katz

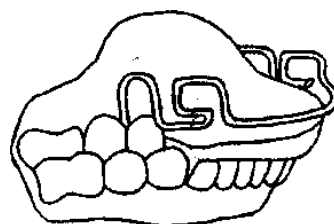


Fig. 15. Activator Andresen Häupl

A typical representative of this group of vehicles is a monoblock unit (activator) Andresen Häupl (1936). At the same time, in a state of constructive occlusion modeled with base plates to the upper and lower jaws. Down the center line into the machine is welded screw or spring Coffin. When distal occlusion, usually formed retraction arc on the upper front teeth (Fig. 15). To reach the upper side teeth sawed down and back plastic at points of contact with the base of the teeth distal cusps, and for moving the lower posterior teeth sawed up and down plastic at points of contact with the mesial surface of the basis and the mesial cusps of teeth. It is significant that the combined action of machines designed based on its functional and operating units. The basis of this design laid R. Frenkel (1960). He created the controls functions. The principle of the method is to eliminate the pressure on the lips and cheeks of the alveolar process and tooth rows in the parts of their underdevelopment, as well as the normalization of closing of the lips, the provisions of the tongue, cheeks, their functions and relationships. The device consists of two Frenkel buccal shields and lip bumper interconnected metal frame - vestibular and lingual arches, palatal clasp, and other details (F. Ya. Horoshilkina, R. Frenkel, L. M. Demner et al, 1987). Depending on the position of main parts control functions, it can be applied for malocclusion and dental arches.

Regulator functions of Frenkel type I consists of 2 vestibular shields, 2 infra lips pumper, vestibular arc to the upper incisors, hinges on the upper canines clasp palatal, lingual arch (or lingual plastic shield) on the lower front teeth (Fig. 16). This unit is used for removing the restriction of dentition, close the teeth with a neutral occlusion in the treatment of distal occlusion

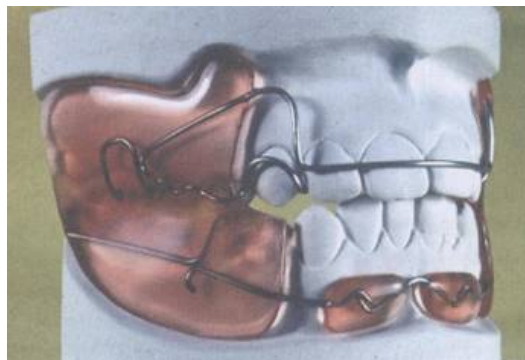


Fig. 16 Regulator functions of Frenkle type I.

Regulator functions of type II differs in that there are pro traction arc to the upper incisors. It is used in the treatment of distal occlusion combined with deep blocking bite.

Regulator functions of type III (fig. 17) consists of two plastic side plates, 2 plates on the occlusal side teeth, two supralabials bumper, protraction arc for anterior upper teeth, palatal clasp, vestibular arc for anterior lower teeth. The device is used in the treatment of mesial occlusion.



Fig. 17. Regulator functions of Frenkle type I.

Quite compact and convenient tool, acting on the basis of the pressure control of muscles, is a lip bumper. He is an arc, which is wearing PVC pipe or plastic which is covered bumper. In the first and second premolars are curves (loops). Endpoints are inserted into the locks, which are soldered to the middle of the vestibular surface of the rings mounted on the first permanent molars. Lip bumper removed during meals and brushing your teeth, it is important to maintain normal oral hygiene status. In applying labial bumper reduced pressure cheek muscles and thus stimulates the growth of alveolar bone in the lateral parts. In the anterior region by reducing the pressure of the circular muscles of the mouth and other facial muscles occurs den-toalveolar extension.

Currently, more and more widely used in the treatment of dento-facial anomalies are positioners - apparatus, made of elastic material and covering the teeth and the alveolar process of the upper and lower jaw. Widespread method of fabrication of positioners for preformed models. To do this, plaster models are cut into pieces, which are connected to the correct ratio. This is a very time-consuming work, which can handle only the highest caliber of techniques. The order of work is the same as in the manufacture of buccal plate

Retention devices. The most troubling outcome in the treatment of dentofacial anomalies is relapse. To avoid this, you need to gently hold Retentive period - a very important stage of orthodontic treatment. Duration retentive period is difficult to determine. It depends on the age of the patient, the type used in the active phase of orthodontic treatment equipment, the intensity of the treatment, the presence of functional impairment not eliminated. Some orthodontists recommend using removable retention devices 1 day a week for life (V.Aleksander). Basically, retention devices can be divided into two types: medical devices in an inactive state, and specially made machines. Specially made devices may be removable and non-removable. Among the large number of removable retention devices are often used plates on the upper and lower jaw with wire elements (clasps, vestibular arch), stamped mouthguard monoblock devices, positioners.

The most common type of non-removable orthodontic appliances used a retainer. It is made of arcs that are located on the palatal or lingual side of the teeth at the level of 2/3 of the tooth crown from

the cutting edge. Fixing is similar to retainers fixing brackets (bonding technique).

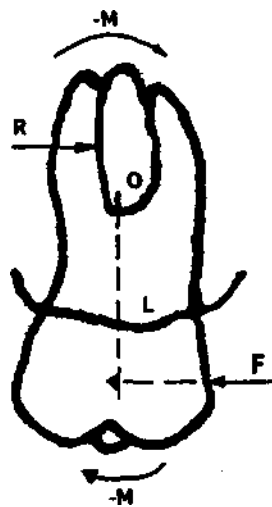


Fig. 18. Retainer

In conclusion, it is suggested that a very large number of different orthodontic appliances and their modifications.

Morphological and functional changes in the dentition in the treatment of dentofacial anomalies.

One of the main components of orthodontic treatment is to move teeth in three mutually perpendicular directions. When you move the tooth to it the effect of active power (P) and an opposing reaction force (K). These forces may forward motion at the coincidence of lines of action and rotational - with a mismatch.



Ris.18. Moving tooth.

About the center of rotation of a tooth; F-active (current) power; R-reactive opposite force of the perpendicular from the center rotation of the tooth to the line of action of force F; M-torque.

The center of rotation of the tooth (A) is approximately at the boundary between the middle and apical third of the root. Unfortunately, we usually can only put pressure on the crown of the tooth, thus, bringing it into rotary motion (Fig. 18). The value of torque (M) is proportional to the active power (P) and the length of the perpendicular from the center of rotation of the tooth (A) to the line of action active force. Achieve pure translational motion of the tooth is extremely difficult. The best chance for this are available from edgewise technology.

Constant subject of discussion among orthodontists is the question of the magnitude of forces used in the treatment of dentofacial anomalies.

These forces "should excite and stimulate the production of osteoblasts and osteoklasts zone stretching and compression of periodontal respectively." Currently, the most optimal force is 20 g per 1 cm² of the surface of the root at the pan-pivoting and 40-50 g at the Hull moving. Although these values are very individual and depends on many factors.

Schwartz distinguishes four degrees of reactivity periodontal applied forces:

1) Weak force or very short-term effect does not cause any reaction in the periodont.

2) Power is less than the capillary pressure (20-26 g na1 cm²), but enough to cause continual resorption and bone formation.

3) Power, exceeding the capillary pressure and long-acting and permanent, causing periodontal necrosis and congestive resorption alveolar walls and cement the tooth root.

4) A very large force cause's impairment of periodontal necrosis may occur.

Bio morphological changes in orthodontic treatment it is advisable to follow, especially on the changes within the alveolar bone. A huge role is played by osteocytes, which are "missing" minerals in the matrix of bone or, conversely, "derived" the salt of the organic matrix of bone, enriching their serum. Speed jet adjustment determined by the content of water in the bones. Her more at a young age, therefore, orthodontic treatment is most successful at this age.

In orthodontic tooth movement in periodontal arise zones of compression and tension zone tissues. When exposed to the forces of the crown of the tooth is his inclination, in the cervical region a zone of compression in which the periodontal gap narrows on the opposite side - the zone of tension. A similar pattern, but in opposite direction is observed in the apex of the tooth root. Compressed blood vessels, periodontal fibers, cellular elements and nerve endings.

In the area of pressure are resorption of bone trabecular, the periodontal fibers, and multinucleated osteoclasts arise. In the power zone is activated activity of osteoblasts, osteoid formation - built the organic matrix of bone.

It must be remembered that the two opposite processes - zone traction and pressure zone - are in a dialectical unity of opposites.

Therefore be reasonable to talk about the prevalence of a process in a particular part of periodont.

In areas suture connections for orthodontic treatment are the same morphological adjustment, as in bone, which concern the periosteal covering the edge of the bone and collagen fibers, connecting the individual bones.

Rather complex morphological changes in orthodontic treatment of the temporomandibular joints. In the articular tubercles are common alteration of bone tissue, drive in those areas where it is not under pressure, is increased by 2-3 times, cartilage cells are larger in areas disk compression reduces the number of collagen fibers and cellular elements, the number of synovial fluid.

Results of experimental studies have concluded that moving the lower jaw forward to the front surface of the articular head is resorption, and the rest of the heads rising up and distally by endochondral bone building (A.G.Shubina, 1978).

In the study of morphological changes in the tissues under the influence of continuous and intermittent forces fundamental difference in the reconstruction of tissues is not established. Based on the frequency of the phase voltages and recreation (G.A.Illizarov), should be considered, it is more expedient to use the power of periodic excitation.

Patient's response to orthodontic device after its imposition may be of two types:

a) orienting reaction inhibits the development of not only conventional, but the food and unconditioned reflexes, secretion of saliva decreases during prolonged mastication, chewing movements erratically, ineffective. Then these functions are normalized.

b) As a result of summation of stimuli increases the excitability of the nervous system, increases the secretion of saliva, chewing movements much, but they are incomplete. Gradually comes adaptation. This form of adaptation to the orthodontic device is similar to the adaptation to dentures (S.S.Popov, 1984).

I.S.Rubinov (1965) investigated the dynamics of the functional parameters in the treatment of dentofacial anomalies functionally active devices. It was obtained as follows. In the first period there is a manifestation of separation bite reflex stretching chewing muscles (myostathic reflex). This is to increase the tone of the rest of static stretched muscle tone and reduce the dynamic compression dentition. After a while the muscle tone is gradually reduced, there comes a new level of physiological dormancy, the treatment effect rail equipment stops. To further tooth movement requires repeated separation bite to activate the stretch reflex of muscles. Effective method for the treatment of dentofacial anomalies with the use of intermittent power. The patient was offered a week use a functional unit, and then a week not to use it. Such a change in the periods of separation and rest bite creates the necessary conditions for the systematic activation of reflexes is separate bite.

Studies I.S.Rubinova requires specific clinical confirmation.

In the study of dentofacial anomalies should be considered not only the morphological abnormalities, but also a complex nervous re-

flex ties, which was established by the anomaly, and the possibility of regulation myo balance during treatment.

Surgical treatments.

Surgical procedures can be used both independently and in conjunction with the instrumental method for the treatment of dental disease. The main factor that accelerates reconstruction of bone tissue is the intensity of the enzymatic processes that occur after bone damage.

When pronounced deformities or anomalies of the dental arches, jaws and malocclusion is not always possible to cure the patient only orthodontic methods. In these cases, surgical technique can support or lead, which allows to achieve consistent results.

Surgical techniques that are used in the treatment of dentofacial anomalies can be divided into the following groups:

- soft tissue - plastic shortened frenulum, moving the insertion of lip frenulum (upper or lower) of plastic in the plot strands of mucous membrane; deepening vestibule of mouth; alignment supramental skin folds;

- on the teeth and tooth rows - exposure crown impacted tooth separation of fused teeth, tooth momentary turn about its axis and replantation or transplantation of tooth removal super complete and individual complete teeth;

- The alveolar process - conducted compact osteotomy (common - linear, tunneling, lattice), the jaws - osteotomy and osteo-ectomy.

Plastic tongue-tie. Limited mobility of the tongue as a result of shortening his frenulum attachment or close to its tip is often the cause of the anomaly bite. Limited mobility of language complicates sucking movements in infants. Mother noted that during suckling such children clicks his tongue, tired quickly, not sucks enough milk is restless. This causes some mothers resort to artificial feeding of the child. Poor movement language can disrupt swallowing sounds and pronunciation. Under the influence of a mechanical obstacle in the form of a shortened frenulum having its abnormal movement. Anomalies of the bite, which arose as a result of dysfunction of the language has considerable resistance.

The shape and density of tongue-tie, as well as features of its junction with the fibers of the tongue muscles are five types of bridles, which restrict mobility (Horoshilkina FY 1965).

Early plastic frenulum prevents disruption of sucking, chewing, swallowing, pronunciation of sounds, and the emergence of dentofacial anomalies. Orthodontic treatment of children combined with physiotherapy. Normalization of muscle function language promotes stability of the results of orthodontic treatment. Plastic tongue-tie at an older age and in adults improves its function, promote normalization of the language. One week after surgery should be encouraged gymnastic exercises for the muscles that lift the tip of the tongue. One of these exercises - the tip of the tongue touching or to the sky, and then the rapid opening of the mouth and tongue clatter. Patient is instructed to count the tip of the tongue teeth on the upper jaw, tongue get the upper and lower lip, nose. As a result, training and occupation, with a speech therapist to raise children learn language.

Plastic lip frenulum. Low attachment frenulum upper lip considered to be one of the reasons diastema of upper jaw. To clarify the indications for surgical displacement during temporary occlusion recommended x-rays of the alveolar process of the roots of the central incisors. If the x-ray in front of the median palatal suture between the roots of the upper central incisors shows a narrow band, which indicates the absence of bone, it is a sign of weaving fibers frenulum of the upper lip in the median palatine suture, which predetermines the diastema. In such cases it is necessary to move the bridle of the upper lip.

Testimony to move the attachment of the lower lip frenulum is a chronic localized gingivitis and periodontal disease. Attaching bridle lips close to the top of the interdental papillae, especially in the lower jaw, with a shallow crease transition mucosa can promote the development of periodontal disease. Due to the stretching of soft tissues in the mouth, the functions are pulling gingival edge of the necks of the incisors. Formed gingival pocket collapses circular ligament tooth, there tartar, destroyed peak interalveolar septum. Parodontopathia development in this area can contribute to the additional bands bridle lips, which are usually of obliquity. In such cases, the removal operation of additional bands to deepen transition folds of mucous membrane. Typically, violations of progress with age, especially when the size of the anomalies jaw (mandibular micrognathia), closely spaced lower front teeth, poor oral hygiene, chronic diseases, endocrinopathia, etc.

Plastic vestibule of mouth. Shallow vestibule of mouth - a local traumatic factor in gingival edge, which has contributed to the emergence of periodontal disease at a localized area or accelerates their development. Vestibuloplastics tasks - is the removal of a traumatic factor for periodontal tissue, but not by lengthening the mucosa of the small vestibule, but by moving aside transition fold increase in area attached to the periosteum of the gums of the teeth or a localized area. Effect depth vestibule company is supported by scarring of compounds that are formed in the early postoperative period. In the produce section of the formed arches forming a protective plate.

Exposure of impacted tooth crown. Called impacted teeth that are in the jaw after the end of their normal eruption and whose root formation is completed. Most others are impacted central incisors, canines, second premolars and third molars, and super complete teeth. Diagnosis is based on clinical examination, the data which confirm radio graphically. Deep-seated impacted teeth can remain in the jaw for a long time. If they do not put pressure on the roots of adjacent teeth, they do not because desorption or shift, not the cause of neuralgic pains, and then they should not be bare.

When the location of impacted teeth close to the surface of the alveolar process in the direction of the eruption of his crown to expose and strengthen its cap - button pad, bracket - for further output with orthodontic appliance. Before the operation, having a place to evaluate the dental arch for impacted teeth. If it is not, then decide the question of creating it by expanding the dental arch or remove individual teeth.

The method of serial extraction of teeth on **R. Hotz** (1919).

Sequential removal of individual teeth or groups includes the following:

1. Extraction canine at the wrong time erupting lateral incisors. These results in self-regulation provisions lateral incisors as a result of the massage, and their position and correct malocclusion with orthodontic appliances;

2. Extraction first temporary molars approaching rudiments premolars to the surface of the alveolar process, which accelerates their eruption;

3. Extraction premolars that prematurely erupted facilitate change in the location of the rudiments of the permanent canines and their correct installation in the tooth row. If based on the X-ray control, you can wait for the eruption of the second premolar earlier than the first, then you should not remove the first premolar, because after this comes the unwanted mesial shift of the second premolar and first permanent molar, resulting in reduced dental arch space for the canine. In such cases, you must remove the first premolar after placement in the arch in front of the second premolar and the eruption of the canine. If you can wait for the eruption of the canine to the second premolar eruption, you need to quickly remove the first premolar to create conditions for the proper installation of canine dentition;

4. Observation eruption of canines and second premolars and their setting in the tooth row.

Compactosteotomy. To accelerate orthodontic treatment pronounced dentoalveolar anomalies and deformities, as well as getting a more efficient and stable treatment results shown surgery - kompaktosteotomy. This is known for a long time. Its principle is to remove a compact disc of bone in a certain extent that weakens the resistance of bone mechanical action of orthodontic appliances. This operation was carried out earlier in the hospital and was quite traumatic.

Known corticotomy following methods:

- Linear or tape
- Tunnel
- Combination
- Grid

Physiotherapy treatments.

Massage - mechanical stimulation of tissue, which is used for therapeutic purposes. The massage is a mechanical irritation of superficial and deep tissue, peripheral nerve receptors, which cause different reflex reactions that lead to the change in the function of organs and tissues. The degree of effect on the nervous system depends on the methods of massage, intensity and time of the procedure. Due to mechanical stimulation is vasodilatation of the skin and deep tissues, which causes an increase in blood circulation and lymph flow, metabolism, biochemical processes and intensity of protective functions of tissues. In the skin, due to accelerated decomposition of protein and enzyme activity appear biologically active substances (histamine, acetylcholine) that provide humoral effects on vascular tone. In muscle fatigue disappears due to accelerated withdrawal of food energy splitting. It reduces swelling and stimulates the metabolism of muscles, which increases their contractile function and disability. There is a re-

distribution of blood in the tissues; it affects the function of the cardiovascular system. Massage stimulates the regenerative processes in the tissue due to the improvement of microcirculation, increases mobility of tissues.

Vacuum therapy.

Vacuum therapy - the use of low pressure with curative intent. At stake action creates a local low pressure and is drawing in the affected tissues, increased vascular permeability, which at sufficiently low vacuum leads to the breakdown of tissues and hematoma formation. Damage to the tissues and blood vessels leads to the activation of physiological processes to eliminate the fire arose. At stake is the enzymatic cleavage of necrotic protein molecules, and as a result - the formation of biologically active substances. Activated immunobiological processes, metabolism and phagocytosis. Due to the development of local hypoxia stimulates cell protective and adaptive processes are opened back the development of new capillaries and micro vessels. The mechanism of action is also important stimulation of nerve receptors in the hearth as a vacuum, and the cleavage products of proteins, which reflexively stimulate repair processes in the focus of damage. Should not be excluded as a humoral effect of biologically active substances that fall into the blood stream and affect the different processes in the body. Destroyed tissue structures and micro-vessels quickly updated, which is beneficial to their functional capacity. In orthodontics using vacuum suction, equal to 40 mm Hg. Art., which is created in the root of the teeth moved. The treatment consists of 8-10 procedures, which are held as resorption of hematomas. In this proteolysis enzymes that freed from the tissue structures in the area of hematoma, accelerate repair processes, which reduces the duration of treatment.

Ultrasound. To speed up the movement of teeth with orthodontic appliances use ultrasound. Mechanism of action: the action of ultrasound in tissues is the alternate compression and expansion of particles, which causes them to vibrate and the direction of the ultrasonic wave, or perpendicular to it. The oscillatory motion of ultrasonic energy is transferred from the particles to particles, which promotes deep enough action, especially in a homogeneous medium. On the border of separate media and tissues can be a reflection of the ultrasonic wave, which creates conditions for interference and education areas of high ultrasonic pressure. This process happens very often on the boundary of different acoustic impedance of tissues like bone - tendon, bone - muscle, which displays 60% of the energy that can manifest itself subjectively feeling dull pain. Mechanical vibrations of tissue particles lead to a "cellular massage" changes physical and chemical processes and heat generation. At high intensity ultrasound in phase stretching can be rupture of intermolecular adhesion forces, and the emergence of micro cavities - cavitation, which breaks the membrane of cells and destroys the molecules of chemicals. Cavitation stands out a lot of energy, especially at the border dividing the media. Oscillatory motion of particles of tissue environments is accompanied by changes in the ionization and bioelectric processes in the cells, increasing the reactivity of different processes, the formation of chemical substances. The biological activity of the ultrasound dose-dependent and can lead to stimulation or inhibition of tissue processes or tissue damage. At this time, ultrasound is used in the treatment of low inten-

sity. Under the action of low-intensity ultrasound is weak tissue heating, expansion vessels, accelerate blood circulation and metabolism. Increased phagocytosis, the permeability of tissue membranes, tissue uptake of oxygen from the blood, improve regeneration, normal neuromuscular excitability, vascular tone, change the function of the endocrine glands. Ultrasound has an anti-inflammatory, analgesic, resolving, desensitizing, fibrinolysis activity. Under the influence of small doses of the regeneration processes, the differentiation of bone tissue, rapidly developing collaterals.

Ulthraphonophoresis - the introduction of medical substances in tissue using ultrasound. To accelerate orthodontic treatment in recent years, a number of methods were applied to the skin, muscles, nerves, mucosa of the alveolar processes, as well as bone. Phonophoresis 10% solution of calcium chloride is used to reduce the period of retention of orthodontic treatment.

Microwave resonance therapy millimeter (MRI).

Under the action of a living organism of electromagnetic millimeter waves with a frequency equal or close to the individual frequency electromechanical oscillations of cellular microstructures, they appear synchronous resonance oscillations. These oscillations are the signals cells to control metabolic processes, restore the affected function, increase body resistance to extraordinary actions. Position of zones of maximum sensitivity of the human skin to MRI correlated with the classical scheme of finding areas of acupuncture zones Zakharyin - Ged. When irradiated areas of acupuncture, which is responsible for "sick body", there is the corresponding sensory response of the body.

Positive results of MRI obtained in the treatment of many diseases. MRI has found its application in the treatment of orthodontic patients.

Vibratory stimulation. The method used a low-frequency vibration of the mechanical vibrations of low frequency for therapeutic purposes. It is proved that the mechanical vibrations can detect different vascular reaction, depending on the intensity and frequency. In response to local vibratory stimulation occur vasomotor reactions, and mild irritation caused mainly vasoconstrictive effect, strong - a vasodilator.

At low frequencies (20-50 Hz), dominated by the phenomenon of vascular atony, with larger (100-200 Hz) - vasospasm. In response to the general effect of vibration is vasodilation different departments microvasculature. Microscopic studies have shown a possible flushing of gum, and sometimes a slight increase in vascular permeability changes in the epithelium, some deterioration of the horny layer in some areas, mechanical damage. In a measure of increasing the number of massage, connective tissue hyperemia gradually changing cell proliferation, both by the vascular endothelium, and by the cells of the connective tissue. Cr. H. Kurz (1975) first used the vibratory action to move the teeth. The author points out that, on a movable tooth to affect Slight pulse strength. For each pulse of the machine tissue pressure in the periodontium and bone increases, and when the pulse tissue pressure decreases. Changing the high and low pressure in the periodontal and surrounding tissues creates the effect of massage. Therefore, increases cellular activity roaming around the tooth, which increases the number of osteoclasts and osteoblasts. Osteoblastic ac-

tivity peaks and leads to the activation of bone formation. At vibrating action is weakened periodontal fiber elements, thereby accelerating the movement of the tooth.

Electrostimulation.

Electrical method used in dentistry for the treatment of muscle atrophy in the maxillofacial region, including those that arise as a result of prolonged immobilization of jaws after fracture, bone-plastic operations, myopathic paresis and paralysis. Clinical application of ways to speed up the eruption of impacted teeth using electrical stimulation and iontophoresis of adrenaline increases the effectiveness of treatment of this disease in comparison with the apparatus by an average of 2 times and reduce the duration of treatment is more than 3 times. Way to accelerate the eruption of impacted teeth galvanic current is to pass a constant electric current through the tissue of the alveolar process, which are Impacted teeth. Current is 0, 1-0,2 mA/cm², duration 15-20 minutes ..

Magnetic therapy. Magnetic therapy - the use of a removable magnetic field of low frequency therapeutic purpose mechanism of action: the action of a removable magnetic field of low frequency in the tissues are low-frequency eddy currents due to movement of charged particles. Physical and chemical processes change as the external magnetic field causes them specific conditions. Such action is helping improve blood circulation, metabolism, trophic tissue. Under the action of a removable magnetic fields in the mucosa of the gums is an acceleration of the microcirculation, reducing the permeability of the tissue, increasing the tone of the peripheral capillaries, eliminating venous stasis, reduced fibrinolysis activity of periodontal tissue and saliva, the level of oxygen saturation.

Clinical examination of children with dentofacial anomalies and deformations.

Treatment of dentofacial abnormalities and deformities requires significant labor costs of medical service. No existing regulations state orthodontist cannot cope with the treatment of all the children (and adults) with dentofacial anomalies. Consequently, it remains the only hope for prevention. The most important conditions for the proper formation of the masticatory apparatus, we believe the following:

- 1) good level of health of the mother (healthy lifestyle);
- 2) breast feeding an infant;
- 3) after the eruption of posterior temporal use child sufficiently stringent and fortified foods (fresh vegetables, fruit, crackers, bread, cake, etc.);
- 4) a sufficient number of dairy products;
- 5) rational oral health;
- 6) the formation of the child's level of health (physical education, sports, health-building activities);
- 7) primary oral hygiene and timely dental health;
- 8) prevent the development of bad habits (sucking nipples, fingers, tongue, etc.);

9) at the first sign of dentofacial anomalies - a consultation with an orthodontist. Check-up - a method of health-care services to the population, including the necessary package of health and social-care activities to maintain and enhance the ability to work with contingents (T.F.Vinogradova, 1988). The idea put forward by clinical examination by a dentist A.I.Evdokimov. For successful prevention and treatment need to organize medical examinations of children in pre-schools and schools. The organizer of a group of children is a dispensary district pediatric dentist. Orthodontist assigned to multiple sites (optimal - of four). At clinical examination of children with dentofacial anomalies and deformations are grouped according to nosological forms. Need for orthodontic clinical examination from 1.7 to 3.6 post orthodontist for 10 000 children.

Basic arrangements for medical examination are:

- 1) survey of children to identify anomalies and dent facial deformities, and the establishment of the predisposing factors and the reasons for their development;
- 2) the definition of dispensary groups and planning of preventive and curative measures;
- 3) timely referral of children with abnormalities formed to treatment;
- 4) Control of starting and conducting specialized treatment, contact with parents and teachers;
- 5) control over elimination of the factors identified abnormalities and deformities;
- 6) to organize and conduct training in children's groups of children and their parents, teachers and medical personnel content and methodology of activities aimed at raising hygiene practices and health care status of the oral cavity;
- 7) to organize and conduct myogymnastics. When children orthodontic clinical examination, except for combining entities that are grouped on the basis of phasing of the development of pathology.

Groups of the orthodontic patients:

I group. Children with normal structure of the masticatory apparatus, the correct closing of the lips, normal basic functions (nibbles and chewing food, swallowing, breathing and speech). Possible slight variations in the structure of the masticatory apparatus are an option rules. These children conducted hygiene education skills conducive to a healthy state of the oral cavity. Children in this group examined the district one pediatric dentist once a year.

II group. Children who do not have significant morphological changes dentition, but with functional disability (posture, method of breathing, speech, facial expressions, position and articulation of the tongue, lips, cheeks, floor of the mouth muscles and muscles of perioral region). This includes children who have bad habits. That is, the children of the second group are "risk factors", predisposition to the development of dentofacial anomalies. These children need to address the causal factors. The complex of the activities have a significant place in this group of children should be given myogymnastics. Appointed as myogymnastics exercises general or particular, removing the impaired function of the child. Children of the second group of

dispensary activity were observed for 3 months. After complete removal of the causes of dentofacial anomalies and the normalization of the functions they are usually transferred to the first group. Unfortunately, some children are in the third group of dispensary.

III group. Children who are not strongly expressed dentofacial anomalies: an incorrect position of teeth, changing the shape of dentition, small variations in the ratio of the jaws. In this case, they have been actively operating causative factors. Children in this group need to address the causal factors and the treatment of uncomplicated with simple orthodontic appliances and myogymnastics. If the second group myuogymnastics. Dispensary is an independent method of treatment, in the third - combined with the instrumental method. After eliminating the causes and symptoms of these anomalies in children examined, as the children of the first group once a year.

IV group. It includes children with severe dentofacial anomalies. Causative factors they have eliminated the technique specific to children of the second and third groups, and carried out the full range of orthodontic treatment. Translation of the group is carried out after the end of the retentive period. Myogymnastics. in this group can be used both during active treatment, and in the period Retentive (in combination with the apparatus, and surgical methods.)

Principles of organization of orthodontic care.

Organization of the orthodontic department (office). The most rational organizing principle of orthodontic care for children is the principle of territorial district. In planning areas, the structure of the existing pediatric sections. The main links of therapeutic and preventive work are pre-school and school sites. Orthodontist working with organized children in the area, usually one day a week. Position dentists in child dental clinics are set at the rate of 0.45 posts per 1,000 children in rural areas - 0.25 posts. Number of orthodontists from the total number of children's dentists is set based on the need for orthodontic care (typically - 0.1 post orthodontist per 1,000 children). Orthodontist in an average year in 2770 takes the sick and ends up treating only 180 patients. Given the timing of data and load a doctor and revealed pathology revealed that 10 thousand people must have 1,5 rates orthodontist. Skilled care for children up to 15 years with dentofacial anomalies and deformations is in orthodontic offices of child dental clinic. At one job orthodontist is given not less than 14 m², every place - to 7 m². Working place should be equipped with a universal dental unit and a set of dental tools (tweezers, mirror, spatula, excavators, drills for straight and angled tip forceps, dental spatula, cup rubber, plaster knife, gas or alcohol burner, etc.). Be sure to be in the office plaster models, writing medical records, case for control plaster models, box ready devices and prostheses. The workplace is equipped with the necessary materials: impression materials, gypsum, sets of dental wax, orthodontic wire, supplies, medicines, etc. Dental laboratory should consist of the main production areas (the area on one technique is not less than 4 m²), plaster, Stamping and Pressing, polymerization, soldering and welding, casting and finishing and polishing. In large hospitals assisted orthodontist in surgical treatments of dentofacial anomalies in the various operations on the jaws, and in particular,

in patients with congenital defects of lip and palate. In the orthodontic office should be conducted next recording and reporting: 1. "A medical dental patient" (form number 043 / y). 2. "papers daily accounting of orthodontist" (form number 037-1/u-88) 3. "Summary of accounting work orthodontist" (form number 039-2/u-88;

Questions for part 1.

1. Features oral newborn and their importance in the formation of the teeth-jaw system.
2. Main stages of the masticatory system. Dentoalveolar facial development in the embryonic period. Features of the formation of the hard palate.
3. Factors that ensure the growth and development of tissues and organs of the masticatory apparatus in children.
6. Tsilinski symptom and prognostic value.
7. "Final" plane on Bowman and its variants.
8. Angle Classification of dental-maxillo-facial deformities and anomalies.
9. Kalvelis Classification of dental-maxillo - facial deformities and abnormalities principles of design.
10. Betelman Classification of dental-maxillo - facial deformities and abnormalities. Construction principle.
11. Illina-Markosian classification of dental-maxillo - facial deformities and abnormalities. Construction principle.
10. The advantages of the classification of the teeth-jaw anomalies proposed by WHO.
11. Basic anthropometric measurements on diagnostic models and their diagnostic value.
12. Features measurement Pont method diagnostic value.
13. Features measurement Korgkhaus method diagnostic value.
14. Features measurement Snagina method diagnostic value.
15. Function studies in children chewing their diagnostic value.
16. Radiographic study of the teeth-jaw apparatus in children (sighting, axial radiographs of teeth, orthopantomography, teleradiography etc.).
17. Transcription telerentgenogramm by Schwartz. Craniometrical measurements, their purpose, diagnostic value.
18. Gnatometrical measurements by Schwartz method, their diagnostic value.
19. Cephalometric role in diagnosing and predicting the outcome orthodontics treatment.
20. Growth and the formation of human jawbone in the age aspect.
21. The morphological structure of the upper and lower jaw in different age periods.
22. Morphological and functional characteristics of the temporary occlusion.
23. Main stages of the masticatory system, their importance in the prediction of orthodontic treatment.
24. Features of chewing and facial muscles in children.
25. Periods of temporary occlusion. Closing character of dentition, alternatives of the distal surface of the second temporary molars between a normal.
26. Anatomical and physiological characteristics of orthognathic bite at time and his constant periods
27. The influence of orthodontic appliances on the tissues and organs of the masticatory apparatus.
28. The nature of the morphological and functional changes in the periodontium using small, medium, large, and constantly interrupted-range forces in orthodontics.

29. Anatomic and functional characteristics of physiological occlusion.
30. Morphological and functional characteristics of milk occlusion.
31. Surgical intervention in treatment of orthodontic patients.
32. Methods of stimulating the orthodontic treatment (surgery, physical therapy, biological), their essence, the testimony.
33. Physiotherapy stimulation of orthodontic treatment (vibration effect, vacuum therapy, microwave resonance therapy mm range, mechanism of action, indications and contraindications for use).
34. Reading to the equipment, surgical and combined treatments of the teeth-jaw abnormalities and deformities in children of different ages.
35. Key occlusion by Angle and Andrews.
36. General characteristics of orthodontic devices. Age indications and contraindications for its use.
39. The mechanical action of orthodontic equipment, its variety and function.
40. Functional orthodontic appliances.
41. Combined orthodontic apparatus its characteristics.
42. Bone reconstruction theory to explain the process of tooth movement in the instrumental treatment.
43. Modern theories of restructuring bone under the influence of orthodontic appliances (DA Kalvelis, SS Reisman, A. Pozdnyakova).
44. Characteristics of the forces that are used in orthodontics.
45. Features of the morphological and functional changes in the periodontium using small, medium and large, Slight and permanent forces in orthodontics.
46. Physic-chemical and biological properties of the clinical and basic materials that are used for the manufacture of orthodontic appliances.
47. The etiology and pathogenesis of dentofacial anomalies and deformations (endogenous and exogenous factors)
48. Determining the Izard type of person.

Second Part

"Anomalies and deformation of dentoalveolar system"

Abnormalities of individual teeth (teething, hard tissue structure, shape, size, quantity). The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

By anomalies teething is premature and delayed eruption. Teeth are staying in their eruption are called impacted.

Early teething usually associated with the state of the whole organism, with the acceleration of the process taking place. In principle, this phenomenon has no significant effect on the formation of dental system. However, early erupted teeth are less resistant to decay. Therefore, in case of premature teething need to take preventive measures to enhance the resistance of enamel.

Much greater practical importance is delayed dentition. The main causes of this disease are as follows:

1. Various diseases in childhood. Preventive measures to reduce the prevention of various diseases of children, early detection and effective treatment.
2. Early extactions of the temporary teeth. In this case, there is hypoplasia of the maxillary bones in the remote areas of the teeth, the development of secondary deformation of dentition and relationships of various anomalies of dentition (mesial occlusion, distal occlusion, deep bite, etc.). Therefore it is necessary to strive to keep the temporary teeth. If, however, were conducted removing the tooth (teeth), the urgent need to make children's dental work. Wrong position of the rudiments of teeth often leads not only to a delay of the eruption, but also to the permanent retention.
3. Lack of space in the tooth row.
4. Inflammatory processes in the roots of the teeth.
5. Supernumerary teeth.

Finally, the diagnosis is established retention of teeth after examining radiographs.

The diagnosis of retention of teeth A.Katz recommends a functional periodontal irritation with bite block plate that helps to activate the adjustment processes of bone tissue. Sometimes this treatment lasts a long time. In the absence of a positive result of the above, the method of treatment, especially in anomaly located impacted tooth, you can resort to a combined surgical-the instrumental method of treatment. At the same time under anesthesia, cut soft tissue and alveolar bone is removed in the direction of eruption. By the impacted tooth is fixed braces, dental arch is superimposed on the arc machine and move

impacted tooth is held by a ring or wire ligatures. Be sure to remember that for proper installation of the tooth in the tooth row, there must be enough space. When not enough space must be created beforehand by the movement of the adjacent teeth. (Fig.20).

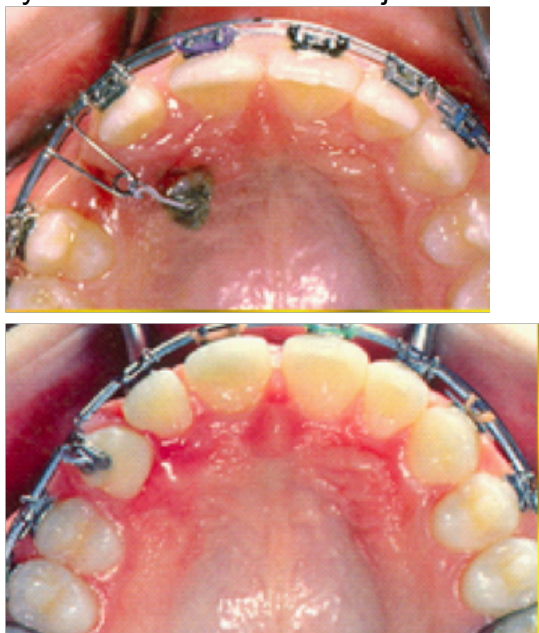


Fig.20. Movement of the impacted tooth.

If the impacted tooth is placed horizontally (nearly horizontal) if it puts pressure on the roots of adjacent teeth, violates a provision of these teeth, causes resorption of the roots, it must be removed.

By the structure of the anomalies of dental hard tissues, especially, should include enamel hypoplasia, as this is the most common abnormality. It is characterized by the presence of defects in the form of symmetric spots, holes, grooves in the groups of teeth. The primary cause of enamel hypoplasia is a violation of its formation and mineralization due to diseases of pregnant women and children in early childhood. Typically, there is a coincidence timing of the disease a pregnant woman or a child, and hypoplasia of the group of teeth, who in this period mineralized enamel. Schemes mineralization temporary and permanent teeth are in the previous sections of this manual.

Measures for the prevention of enamel hypoplasia are evident. This prevention of diseases of pregnant women and children, early childhood nutrition of pregnant and lactating women, natural breast-feeding.

The shape and color of the teeth are corrected either by restoration therapy or by various artificial crowns. Enamel hyperplasia - a rather rare phenomenon. It appears enamel drops, unnecessary bumps in posterior teeth. As a rule, no functional and aesthetic disturbances do not.

Imperfection Amelogenesis shows the color change of enamel, the presence of vertical slots. Most evident is the process of formation of violations of enamel and dentin in the syndrome of Stanton-Kapdepon. In this case, there is complete or almost complete absence of enamel temporary and permanent teeth. The disease is hereditary. There is an increased abrasion of hard tissues, the fragility of the teeth, discoloration, obliteration of dental cavities and channels hypercementosis, vacuum pockets of bone tissue in the tips of the roots of the teeth.

Increased abrasion of hard dental tissues gives rise to secondary deformations (distal occlusion, deep bite, etc.), and often to the dysfunction of the temporomandibular joints.

Reconstruction of the shape of the teeth in the syndrome of Stanton-Kapdepon restorative therapy and conducted by manufacturing artificial crowns. These patients often seek care in the advanced stage of the disease. Anomalies in the shape of teeth are very diverse. Irregular shape can have the crown and root of the tooth. Most often disrupted form of the second upper incisors, which is indicative of their reductions.

Sometimes there are described Hutchinson and Fournier central incisors with crescent blade cutting edge in the form of crowns screw-driver-shaped that in the presence of parenchymatous keratitis and congenital deafness may indicate congenital syphilis.

Generally identifies the various forms of tooth crowns anomaly: cube-shaped, conical, wood, etc.(Fig.21)



Fig.21. Anomaly forms of the teeth

Anomaly shape of the teeth can cause deformation of the dental arches. Restoration of the normal form of dentition is held, as a rule, the instrumental method, and the restoration of the normal form of crowns of teeth with artificial crowns.

Deviations in the size of the teeth may be in the form macrodenty and microdenty. To detect this pathology is necessary to know the average size of the teeth (Table 3).

As a rule, the deviation in the width of the crowns of the teeth in the direction of increasing results in closely spaced rows of teeth in the dental and downward - to three and a diastema. Depending on the clinic at the macro-and microdenty held orthodontic, preventive or therapeutic measures. By anomalies include increasing the number of teeth (hyperodenty), decrease (hipoodenty) until the complete absence of teeth (amentia).

Table3. The quantity of crowns of teeth (mm)

		By Weiss (1965)		By Ystimenko(1984)	
		Height	Width	Height	Width
Central incisors	Upper	8.5-14.0	7.0—	8.2-9.7	8.0-9.0
	Lower	7.5-10.0	4.0—	7.0—	4.9—5.6
Lateral incisors	Upper	8.0—	5.0—	7.1—	6.0—7.1
	Lower	8.8-11.3	5.2—	7.2-8.7	5.6-6.4
Canines	Upper	9.5—	6.5—	8.0—	7.1—8.1
	Lower	9.0-14.0	2.0-3.0	8.5—	6.3-7.2
The first premolars	Upper	7.0-10.8	5.0-7.0	6.6-8.0	6.2—7.2
	Lower	7.5—	5.0—	7.2—	6.4—7.3
Second premolars	Upper	6.2-10.2	6.0—	5.3-6.9	6.0—7.0
	Lower	6.9-10.0	6.0-8.0	6.0-7.8	6.5-7.4
First molars	Upper	6.8—9.0	7.8—	4.5-5.9	8.7-10.0
	Lower	10.0	10.0—	4.4-6.1	10.3-11.7
Second molars	Upper	5.0-7.0	9.0—	4.5—5.0	8.7—10.0
	Lower	10,0	9,0-11,0	4,5-5,9	9,6-10,8

Increasing the number of teeth is due to the so-called supernumerary teeth. Supernumerary teeth - is an atavism. All classes of vertebrates, with the exception of high-end - mammals, there is an indefinite number of teeth. The presence of supernumerary teeth - a "memory of the past."(Fig.22)

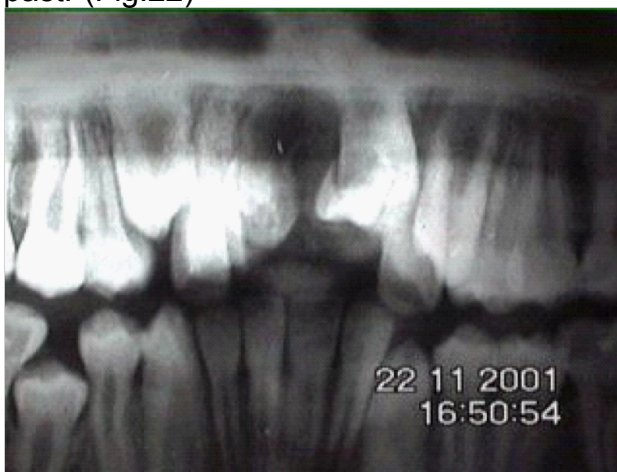


Fig.22.Supernumerary teeth.

Most supernumerary teeth arranged in the first cutting edges are irregular. Erupted supernumerary teeth tend to break the shape of dentition. Very often supernumerary teeth erupt. Staying in the thickness of the jaw bone, they prevent the complete eruption of the teeth. Fig. 19 seen very large diastema of the upper jaw as a result of the available two supernumerary teeth between the central incisors that were removed. Treatment of emerging deformation will be quite time-consuming.

Most often, supernumerary teeth removed and delay, you should not, because developing dentition anomalies form and complete retention of teeth require a long and arduous treatment.Reducing the number of teeth can be due to various causes. First of all - this is a reduction of the teeth. During reduction teeth change their shape, size, it was noted above, and, ultimately, may be completely absent. Based on the

hypothesis of morphogenetic fields, extended and developed by Butler and Dahlberg, different groups have different teeth tendency to reduction.

According to this hypothesis, the teeth structure is determined by the control gene that acts on the entire part of the tooth system on the part of the individual teeth. Therefore, formed a separate field. Some fields have a wide scope, while others have a more limited scope and determine the development of feature within the same group of teeth. Morphogenetic complex field interact with each other. One field can be "superimposed" on another adjacent field. Thus, one class of adjacent teeth can assimilate class. Within the group of teeth is the most intense area of the field where the sign is the most complete expression. This is the so-called pole of the morphogenetic field. Located in the area referred to as the key field teeth teeth. They have a solid structure and are much less susceptible to reduction than the teeth are far away from the pole and referred to the variability of the teeth. The most common terminal is located at the medial border of each class of the teeth, although there are exceptions.

Proceeding from the above, it becomes quite clear why an amentia second upper incisor occurs many times more often than the first adentia. (Fig. 23). The key teeth in the upper dentition is the first cutter, canine and first molar. On the lower jaw - the second incisor, canine and first molar. In the group of premolars more stable the first premolar, although his tendency to a reduction of slightly higher than the key incisors, canines and first molar. It can be assumed that the most dramatic effect of the gene occurs in the canine, which can be combined with a conditional one premolar in the morphogenetic field. In the group of premolars adentia observed more frequently in the second premolar and first premolar though there may be no.



Figure 23. Reduction of the lateral incisors.

The absence of rudiments of teeth can be caused by the development of inflammatory processes in the alveolar bone.

Edentulous quite rare. Most often, it is a hereditary disease – anhydrosis ectodermal dysplasia. In this disease, along with edentulous usually marked changes in other derivatives of the ectoderm (dry, pale, wrinkled skin, deformed nails, absence or reduction in the amount of hair, the hair in the form of a gun), dryness of the oral mucosa (the defeat of the salivary glands), pallor of her. Alveolar processes dramatically underdeveloped.

Treatment gipodontics and edentulous carried out using different dentures. Since the absence of teeth, usually leads to the development of various strains dentition, such patients need orthodontic treatment depending on the developing pathology.

The anomalies of the teeth; dentition anomalies form. The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

By the anomalies of the teeth are the following forms: vestibular, oral, mesial, and distal, supra- and infra-position tortoposition (rotation), and transposition of the teeth. Temporary teeth are much less likely to have anomaly position than permanent. Quite often, different kinds of anomaly of the teeth fit together.

Reasons anomaly of the teeth varied: atypical tab rudiments of teeth, impaired growth of the jaws, teeth violation of the development process, violation of terms of the change of teeth, a significant discrepancy between the size of temporary and permanent teeth, supernumerary teeth, macrodenty, early removal of the temporary teeth, destruction and removal of permanent teeth and etc.

Mesial position of the teeth, usually accompanied by closely spaced front teeth, layering them on top of each other and rotating around its axis. Thus, due to inadequate load on the supporting device teeth having periodontal disease.

The anomaly of the teeth, particularly mesial position, very often due to the mismatch of the size of the teeth and alveolar processes. Reduction of the alveolar bone usually precedes a reduction in the rate of development of the teeth. This is probably due to the different rates of metabolic processes in the alveolar bone and tooth enamel. This fact is primarily due to the need to remove certain teeth (usually first premolars, at least some other front teeth).

In the treatment of mesial position of teeth, the following techniques: the expansion of the dental arches, distal movement of the teeth and turns around the axis of the teeth. During the period of temporary occlusion and the initial period of replacement of bite can be used positioners, extending apparatus with a screw. In a removable bite more often used machines with screws, springs and levers. During the permanent dentition give the best results arc apparatus with a bracket system.

The distal (lateral) displacement is often incisors, especially the first. This leads to a diastema.(Fig.24). By diastema lead a variety of reasons: adentia second incisors, a large seal of the alveolar bone septum between the first incisors, low attachment of the upper lip frenulum, the loss of the lateral incisors, the presence of supernumerary teeth in the area of the central incisors, bad habits, finger sucking, tongue, objects, etc. the possibility of self-control diastema is rather limited. Self-regulation is usually a removable bite diastema up to 2 mm, and the diatom with thickened base of the upper

lip frenulum of more than 2 mm (A.A.Stafeev).



Fig.24. Diastema.

Treatment of diastema most diverse. During the period of temporary occlusion applied vestibular plate and positioners for normalization of nasal breathing and eliminate bad habits. Supernumerary teeth usually removed. Widely used in the treatment of diastema plastic upper labial frenulum with partial excision of the medial septum interalveolar. Given the possibilities of self-control, plastics spend more after the eruption of the second incisor.

With a broad base of the upper lip frenulum (more than 2 mm), there is no hope for self-regulation, so the timing of the operations may be different.

In the treatment of diastema in a removable bite more often used with removable orthodontic appliances and other hand-shaped springs vestibular arcs. Also various non-removable devices. You can use the following non-removable device design. On the movable teeth stronger crown or ring to which are soldered to the bushing. One of the sleeves has an internal thread, a second unthreaded. Bushing is connected by a screw thread pitch which corresponds to the internal thread of the sleeve. By turning the screws converge crowns or rings, and therefore the movable teeth.

During the permanent dentition the most widely used in the treatment of diastema got arc apparatus with a bracket system.

Vestibular, oral teeth position and rotation around the axis of the teeth are most commonly associated with the lack of space in the tooth row. Along with this causes of great importance early removal of the temporary teeth. The prevailing view that if, prior to the eruption of the permanent tooth there are not more than a year, a temporary tooth can be removed, is deeply flawed. During this period, the adjacent teeth will shift significantly, and the removed temporary tooth permanent tooth to erupt anomaly position. Most often in the vestibular position erupted the canines.(Fig.25).

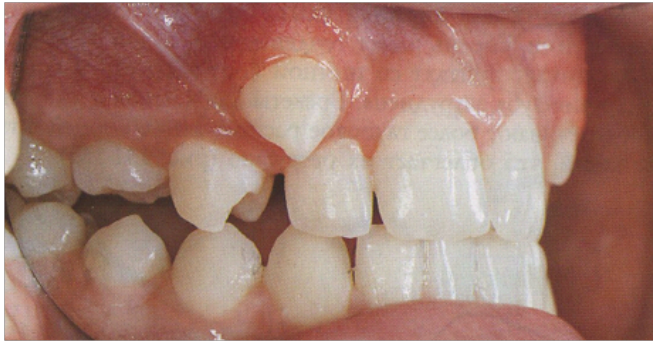


Fig. 25. Vestibular position of canine with the lack of the space.

Treatment of vestibular, oral teeth position and rotation around the axis of the wire removable (with vestibular arc springs, screws) and non-removable arc tubes. Supraposition and infraposition of upper teeth and lower teeth - this is an incomplete dentition. Most often this is due to lack of space in the dentition, improper position of the tooth bud and some other reasons. The most important aspect in the treatment of abnormalities of the teeth in the vertical direction and specifically supraposition and infraposition of upper teeth and lower teeth, to provide a space in the dentition. Further treatment follows the same principle as the treatment of impacted teeth, i.e. traction of teeth, often with the help of non-removable devices. Although it must be remembered that after the establishment of adequate space in the dentition of the displaced tooth, he may gradually be installed in the correct position and are using a removable orthodontic appliance.

Infraposition and supraposition of upper teeth and lower teeth can be formed after the early loss of teeth due to trauma antagonists, partial edentulous or close the teeth. To resolve this strain used removable orthodontic appliances with bite block sites and non-removable devices arc.

Anomalies in the form of dentition is most closely associated with abnormalities of the teeth. They should be viewed in three dimensions. (Fig.26)

a) *The anomalies form of dentition in transversal direction.*

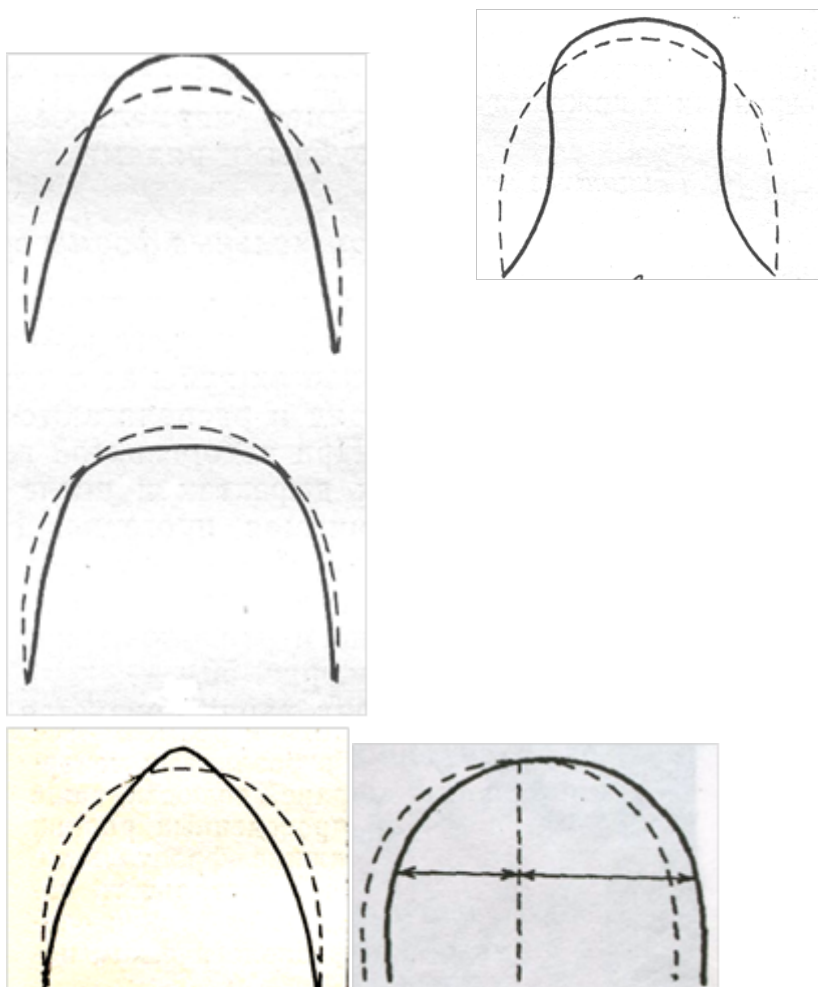


Fig 26. Anomaly of the forms of the dental arches.

Narrowing of dentition. The main reasons for the restriction of the dental arches, and their apical bases are: mouth breathing, bad habits, including a pacifier, a violation of swallowing, speech, facial parafunction, chewing muscles and the muscles of the tongue, tongue-tie, the correct position of the head during sleep, carious tooth decay, rickets and other diseases.

Narrowing dentition most commonly associated with a variety of malocclusion. The narrowing may be dental, alveolar and basal arches. The following types of forms: the restriction of the dental arches: V-neck, saddle-shaped, U-shaped, trapezoidal, general narrowed, etc. Moreover, there is often overcrowded front teeth. For the diagnosis of indicators are used Pont, Linder-Harth, Snagina, etc. For example, in Snagina in normal width of the apical bases of the upper jaw is 44% of the amount of mesiodistal diameters of 12 permanent teeth, and the width of the basis of the lower jaw - 43%.

The main objective in the treatment of this type of anomaly is an extension of the dental arches and the stimulation of the growth of the apical base. Depending on the age of the patient are different orthodontic appliances. During the period of temporary occlusion - is mostly positioners, a removable bite - extending plate with screw or spring, and in a constant bite - arc apparatus with a bracket system.

With a significant narrowing of the dentition, are normally removed some teeth (most often - the first premolars). At older ages may use compact osteotomy, the disclosure of the palatal suture.

Expansion of dentition. The reasons for the expansion of dentition can be bad habits, wrong tab rudiments of teeth, delayed dentition, macrognathy, hereditary or acquired tumors, macroglossia, etc. The expansion of dentition is less common than their contraction. Treatment expansion of dentition is intended to delay their further growth in the transversal direction. During the period of temporary occlusion can be used vestibular plate, positioners, etc., during the period of replacement of bite recommended removable appliances with a screw, in the permanent dentition period - mostly non-removable devices arc. Depending on the cause of this disease, if necessary connected surgical treatments.

b) *The anomalies form of dentition in the sagittal direction.*

Elongation of dentition is stated on their overall length or the length of the anterior segment of the dental arch. The reasons for this anomaly are bad habits, macrodenty, supernumerary teeth, impaired swallowing, poor articulation of language.

The causes of shortening of dentition are anomalies shapes, numbers and location of teeth, hypoplasia of the maxillary bone, bad habits, carious tooth decay, early loss of teeth, adentia, retention, incorrect position of the rudiments of teeth, and improper eruption. Wherein teeth are impacted some crowded state of partial or eruption.

Treatment of dental anomalies in the form of series in the sagittal direction depends on the cause of disease which developed and subject to the same principles as in the treatment of dental anomalies in the form of series in transversal direction. Apply removable and non-removable devices functional, mechanical and mixed action depending on the period of dentition.

c) *Forms of dentition anomalies in the vertical direction* (dentoalveolar shortening or lengthening) are usually the case in some segments of the dental arches. Typically, this is combined with vertical malocclusion (deep and open bite). Therefore, the principles of prevention and treatment will be provided in the relevant sections of which will be addressed in the vertical malocclusion.

Sagittal malocclusion

The distal occlusion. The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

The distal occlusion (distal occlusion, occlusion prognathic) - is a violation of the closing of dentition, when the lower teeth are located distal to the upper teeth (Class 2 Engle). Such a relationship of dentition can be caused by various factors: macrognathy maxillary, mandibular micrognathy, prognathia maxillary, mandibular retrognathia, shifting teeth and dentition. This fact is extremely important, because it determines the nature of the treatment. However, it should be noted that, as a rule, are combined forms.

Among the causes of distal occlusion is essential genetically caused the discrepancy size and position of the teeth and jaws.

A child is born with a distal position of jaws. Only in the process of breast feeding in the future under the influence of mastication lower jaw gradually grows and moves in relation to orthognathic upper jaw. Consequently, artificial feeding is one of the leading causes of distal occlusion, as this child does not make sufficient effort and, conse-

quently, reduced the amplitude of the movements of the lower jaw. If, after the eruption of primary teeth child continues to eat mostly soft food, it also contributes to the development distal occlusion. Dramatically reduces the chewing function carious tooth decay process. Development of the distal occlusion (distal occlusion) contribute to bad habits (sucking pacifiers, fingers and various objects, etc.).

To rise distal occlusion usually leads impaired nasal breathing. The upper jaw is devoid of internal support language narrows, the front portion thereof, together with the front teeth pushed forward, aided by the weakness of the orbicularis oris muscle. Mouth breathing at the lower jaw moves back due to increased tone chin-hyoid, digastric and jaw-hyoid muscles.

At the distal occlusion canines, premolars and molars may be in contact with teeth of the upper jaw are placed in front of like crowns of the teeth of the lower jaw. In the classification Angle - this is indicated as second-class (front buccal papilla of the upper first molars of the same name is set to bump the bottom of the first molar into the gap between the sixth and the fifth tooth). Angle divides the class into two subclasses:

- 1) fan-shaped upper front teeth are tilted forward,
- 2) The upper front teeth arranged with an inclination towards the oral tightly pressed against the lower teeth. More often than distal occlusion combined with deep burin overlap. Often, due to imbalance between the dental arches in the sagittal direction of the lower lip falls into the gap between the upper and lower teeth, which leads to further rejection ahead of upper incisors and exacerbate disease (Fig. 26). At the distal occlusion violated the basic functions of dentition. Disrupted the function of biting and chewing food, often occurs unclear pronunciation of sounds, infantile swallowing.



Fig. 21. The distal occlusion

Before proceeding to special methods of treatment of distal occlusion, should, if possible, to eliminate the causes of the development of this anomaly, or contributing factors. Need to reorganize otolaryngology, rehabilitation of the oral cavity with the reduced form of crowns of teeth, if necessary, the plastic lip frenulum, eliminating bad habits.

One effective method of treatment of distal occlusion in the period of temporary occlusion is myogymnastics of circular muscles of the mouth and muscles, pushing the lower jaw.

The objectives of the treatment of distal occlusion of the second class, subclass 1 by Angle, as a rule, include the expansion of the dental arches, retrusion of the front teeth of the upper jaw, the stimulation of growth of the mandible. Depending on the specific shape abnormalities (dentoalveolar form gnathic forms) objects can vary.

During the period of temporary occlusion for the treatment of distal occlusion, some authors recommend the use of vestibular plate proposed Korbitz(1914). Currently, the most suitable for these purposes should be considered positioners.(Fig.27).



Fig.27. Positioner in the oral cavity.

Method of therapy is recommended billboard control functions Frenkle (RF-1). The main features of this unit is on the side panels, which should not touch the alveolar processes of the upper and lower jaw, and lower lip bumper, which should not touch the alveolar ridge of the mandible. Additional details are vestibular arc for retraction of upper anterior teeth, fangs hinges on promoting growth retardation of the upper jaw and the distal displacement of the canine teeth, palatal clasp connecting the buckle shields, lingual arch, which sets the lower jaw in a neutral position and deflecting the lower incisors forward.

During the period of temporary occlusion may use Muleman propulsor that holds the lower jaw in an extended position (to neutral ratio of the first permanent molars), separates the bite in the posterior region, and moves the front teeth of the upper jaw back (Fig. 28). During the replacement of bite, most appropriately, to apply different designs activators: Andresen-Häupl, Klammt, etc.)

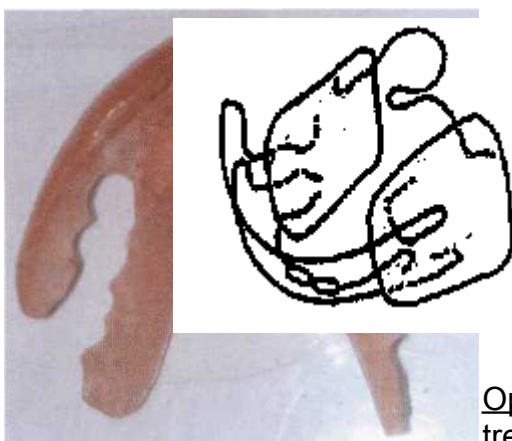


Fig .28. Muleman propulsor
Fig. 29. Open activator
Klammt.

Open activator by Klammt used to treat distal occlusion with protrusion of

the upper front teeth (Fig. 23).

Vestibular arch for the upper and lower tooth row derived from the basis of the unit between the canines and first premolars (or the first time molars). They are bent backwards in a loop and extend to the second premolar (second temporary molars). Palatine clasp out of the plastic part of the apparatus at the level of the first premolar (first time molar), is bent upwards and backwards with the creation of an oval curve at the level of the distal surface of the first permanent molars. Palatine clasp, repeating loop of the alveolar process and palate is separated from the mucous membrane of 0.5 mm.

The plastic part of the device is located on the lingual (palatal) surface dentoalveolar arches of canines to the first or second permanent molars. In the permanent dentition, together with the above devices, it is appropriate to apply the arc apparatus with intermaxillary traction. Perhaps the use of removable and fixed devices with additional extra oral traction (Fig. 30).

Treatment of distal occlusion of the second class, 2 subclass Angle be carried out in two stages: elimination of blocking the mandible by normalizing the shape of the upper dentition and the normalization of relations dentition.

Fig. 24. The headgear and the extraoral traction.

Measures for the prevention of distal occlusion of the stem of the causative factors, breast feeding, prevention of childhood diseases, the prevention of dental caries and oral hygiene, eliminating bad habits, normalization of nasal breathing, early child dentures.



Table 4.

Action Scheme for the prevention and treatment of distal occlusion

Periods of development	Methods of prevention and treatment
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Temporary occlusion	<ol style="list-style-type: none"> 1. Digital massage. 2. Myogymnastics for orbicularis oris muscle (using disks devices, Activators vestibular plates vane apparatus, fingers, etc.). 3. Myogymnastics for the muscles, pushing the lower jaw. 4. Exercises for the normalization of nasal breathing. 5. Vestibular plate positioner, functional regulators. 6. Compressive bandage on the upper jaw.
Mixed occlusion	<ol style="list-style-type: none"> 1. The combination myogymnastics with the instrumental treatment. 2. Apparatus treatment (vestibular plate positioners bite block plate functional regulators, activators, at the end of - non-removable devices arc, etc.). 3. The combination of hardware with the surgical method (usually the removal of some teeth).
Permanent occlusion	<ol style="list-style-type: none"> 1. Instrumental method (all of the above devices, and extensive use of non-removable devices arc, a combination of intraoral and extra oral devices). 2. The combination of a hardware method to the surgical technique, at least - a surgical method as the primary method of treatment

Mesial occlusion. The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

Mesial occlusion (mesial bite, bite prognic) - is a violation of the closing of dentition, when the lower teeth excessively biased towards the mesial upper teeth (Engle class 3). That combination of dentition can be caused by various factors: macrognathy mandibular, maxillary micrognathy, prognathia mandibular, maxillary retrognathia, shifting teeth and dentition.

Isolated anomalies of the upper jaw (distal position of the teeth, microdentia teeth, crowded teeth position, adentia teeth, retrognathia, shortening of the dentition, micrognathy) and lower jaw (mesial movement of posterior teeth, macrodentia teeth, three, between the teeth, supernumerary teeth, prognathy, macrognathy, the elongation of

the dentition). Depending
 on the mechanism of
 mesial occlusion
 will be
 planned
 rational



treat-
 ment.
 Among the
 reasons for
 the development
 of mesial occlusion is
 essential genetically caused the
 discrepancy size and position of the teeth and jaws. Among the other
 causes of mesial occlusion should be noted: illness of the mother dur-
 ing pregnancy, birth trauma, hypoplasia of the intermaxillary bone;
 edentulous in the upper jaw, retention or loss of the upper teeth over.
 Complete teeth in the lower jaw, delayed replacement of teeth, and

various diseases of children; shortening of tongue-tie, hypertrophy of the palatine and lingual tonsils, macroglossia, bad habits, uneven mounds erasing temporary teeth and uneven replacement of teeth on the upper and lower jaw, anomalies of the teeth, the different causes that lead to the violation myodynamic equilibrium type of infantile swallowing, impaired articulation of the tongue during speech, acromegaly, etc.

At the mesial occlusion characteristic appearance of the patient: in favor chin, upper lip sinks, a concave facial profile. When different kinds of occlusion mesial severity of these symptoms may be different. Fig. 31 shows a typical profile of a face with mesial occlusion.

Mesial occlusion caused by the displacement of the mandible, may be accompanied by dysfunction of the temporomandibular joint (pain, snap, snap, etc.).

Before proceeding to special treatments mesial occlusion, it is necessary to clearly define the shape pathology as possible liquidation salivated the causes of the development of this anomaly, or contributing factors,

During the period of temporary occlusion one of the most effective treatments is myogymnastics. It is advisable to assign exercises to train the muscles of the tongue and the normalization of swallowing function and some other exercises outlined earlier. It is also advisable to train the circular muscle of the mouth.

With a shortened bridle language must necessarily hold plastic surgery. It is extremely important to the fight against bad habits. If you violate uniform abrasion of teeth carried separation of the cutting edges of temporary incisors and canines mounds time.



Fig. 31. Profile of the face and character of clamping teeth with mesial occlusion.

During a removable bite feasibility figuratively applied submental sling with head cap and a rubber traction. If this has a profound incisive overlap, you can optionally use the device by Brukl.

In the initial period removable bite can continue to apply the above treatments. Next to a removable plate for occlusion of the upper jaw with protraction springs by Bryukl unit (Fig. 32).

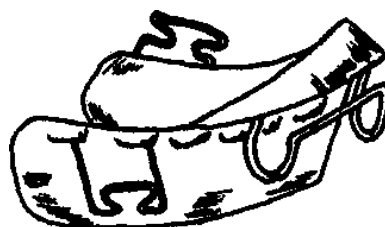
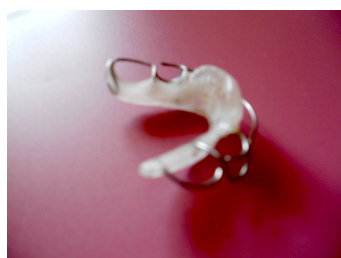


Fig. 32. Brukl apparatus

When gnathical form due to the increase of the lower jaw, it is appropriate to delay the growth of the latter, which can be achieved by using the chin sling with head cap and rubber extra oral traction. The direction of the rubber traction should be backwards and upwards, in the direction of the articular processes.

During a removable bite appropriate to apply machines, affecting both jaws, for example, the Andresen-Goypl activator, open activator Klammt, the unit Basharova etc. Shaper bite by Basharova used to consolidate the results of the treatment of mesial occlusion and additional redress of individual teeth. It consists of a palatal plate and a guide plane of a continuous series of wire bends. To supplement the unit can be expanded with a screw.

In a permanent occlusion, along with the above-described treatments is very effective to use devices with arc intermaxillary traction.

Measures for the prevention of distal occlusion are planned depending on the causes and mechanisms of development. This disease prevention pregnant women and children, plastic tongue-tie, fighting with bad habits, rehabilitation of upper respiratory tract, the struggle with the "laziness" of chewing, swallowing and speech normalization, etc.

Table 5:

Action Scheme for the prevention and treatment of mesial occlusion

Periods of development	Methods of prevention and treatment
Temporary occlusion	<ol style="list-style-type: none"> 1. The finger massage. 2. Myogymnastics for the muscles of the tongue and muscles, displacing the lower jaw back. 3. Plastic tongue-tie. 4. Vestibular plate with damper for the language or the pearl, the positioner, functional regulators. 5. Stripping cutting edge incisors and canines mounds. 6. The normalization of the functions of swallowing, nasal congestion, sanitation 7. Pickup sling with head cap and rubber traction.

Mixed occlusion	<ol style="list-style-type: none"> 1.The combination myogymnastics with the instrumental treatment. 2.Apparatus treatment-(vestibular plate, positioners, devices Bryuklya, Basharova, functional regulators, promoters, etc. 3.The combination of hardware with the surgical method (Usually the removal of some teeth).
Permanent occlusion	<ol style="list-style-type: none"> 1.Instrumental method (all above devices; widespread use of non-removable devices arc, a combination of intraoral and Extra oral devices). 2.The combination of hardware with the surgical method (removal of some teeth, compact osteotomy). 3.Surgical method

Vertical malocclusion

Open bite. The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

Open bite is a form of vertical malocclusion. In this case, there is a vertical gap between the teeth at the closing of dentition. This gap may be in the front portion of the dentition (usually) or side portions.



Fig. 33. Open bite

Some authors distinguish between open bite traumatic (due to bad habits) and true (rachitic) bite (D.A.Kalvelis, 1964).

Traumatic open bite is caused by the action of harmful habits (thumb sucking, lips, cheeks, tongue, and various items, sleeping with his head thrown back). Great importance is the mouth breathing, infantile swallowing, macroglossia, short tongue-tie, improper articulation of the tongue during speech. Very detrimental factor is the prolonged sucking a pacifier. In addition, it acts like any other bad habit, it leads to the development of resistant forms of improper swallowing.

The reasons for the true (rachitic) open bite stem from its very name. Rickets - a rather widespread disease associated with the disturbance of mineral metabolism. Thus one of the major mechanisms of open bite is a violation myodynamic balance.

Such a categorical distinction between these two forms of open bite is not appropriate. A simple example: a child with rickets, sucks his thumb. What is his form of an open bite? In our example, we can assume the habit of sucking fingers cause of open bite, and rickets a condition in which the cause of this effect.

It is advisable to allocate form an open bite on its localization. Hence the two main forms: open bite in the anterior open bite and in the posterior region (single-sided, double-sided).

The severity of an open bite is determined by the magnitude of the vertical slot: I degree - up to 5 mm, II degree - from 5 to 9 mm, III degree - more than 9 mm.

In addition to shortening the dentoalveolar (most upper front teeth) is observed in the majority of cases dentoalveolar extension in side portions of the upper jaw, and often increased mandibular angle (greater than 135°).

. In the open bite is often observed narrowing of the dental arches (especially the top), anterior crowding.

Open bite leads to significant functional impairment (difficulty nibble food, chewing, abnormal swallowing, speech impairment, changes in breathing).

Treatment of open bite should be differentiated depending on the variety, severity and age of the patient.

During the period of temporary occlusion therapy, above all, should be aimed at addressing the possible reasons for the development of open bite: the elimination of bad habits, language normalization of the situation, the normalization of nasal breathing, swallowing, and sound production. Very effective in the elimination of bad habits are the vestibular plates of different designs and positioners.

During the period of temporary occlusion used a variety of removable appliances with the addition of the component parts of a wire or plastic shall be removed from the tip of the tongue of dentition and prevent harmful habit tongue pressure on the front teeth. The design of these devices depends on the sagittal and transversal concomitant pathology occlusion.

A very effective and necessary method of treatment is myogymnastics circular muscles of the tongue and mouth muscles.

In the initial period removable bite the same methods of treatment, and during the period of temporary occlusion. At various plate camera mounted springs, levers, lingual or vestibular arch, providing dentoalveolar expansion (or contraction) and the removal of sagittal and transversal occlusion anomalies.

At the end of the period of change in the bite and constant occlusion arc non-removable devices, at sufficiently resistant teeth may use of reverse arcs. These devices can be combined with the vertical extra oral traction (chin sling with head cap). In a typical open maxillary dentition, characterized by alveolar tooth-shortening in the upper front teeth and dentoalveolar extension of the upper side of the teeth, it is recommended to use the apparatus Herbst-Hozhokar (Fig. 28).

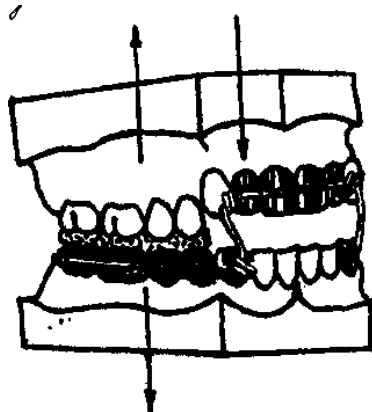


Fig..34.Apparatus by Herbst-Hozhokar.

It consists of a welded metal splints or crowns on the side bottom teeth with plastic occlusal pads, pipes (or hooks) in the molar region and hooks in canines. On the front teeth of the upper jaw made of the ring (crown) of the hook from the vestibular side. The rubber ring is applied to the tube (hook) of molars on the one hand fed to a hook canine, superimposed hooks on the front teeth of the upper jaw, is brought under the hook on the opposite canine and fixed in the tube (hook) on the other hand molars. Can be used instead of non-removable teeth aligners on a removable side plate with the occlusal pads. In the permanent dentition to accelerate orthodontic treatment prior to application of the apparatus can be made compact osteotomy. In exceptional cases, in patients older than 18 years with the ineffectiveness of the equipment and the combined method of treatment of surgical treatment. Prosthetics with crowns of different design should be considered only as an auxiliary method.

In an open bite prevention should focus on the improvement of the pregnant woman and the observance of healthy lifestyle, prevention of rickets and other diseases of children, to prevent the occurrence and elimination of bad habits, the normalization of nasal breathing, articu-

lation of language in speaking and swallowing. With tongue-tie to hold it plastic.

Table 6.
Schema action for the prevention and treatment of open bite

Periods of development of dental systems	Methods of prevention and treatment
Temporary occlusion	<ol style="list-style-type: none"> 1. Myogymnastics orbicularis oris muscle and other muscles in combination depending on pathology. 2. Eliminating bad habits, the normalization of the functions of breathing, swallowing. 3. Plastic tongue-tie. 4. Vestibular and vestibular-oral plate positioners. 5. Podborodochnaya sling with head cap and rubber traction
Mixed occlusion	<ol style="list-style-type: none"> 1. The combination myogymnastics with the instrumental treatment. 2. Apparatus treatment (plates with stops for language, tray hook and rubber traction bite block plate, activators bionator Balters, Herbst-Hzhokar apparatus at the end of the period - nonremovable arc devices, etc.). 3. The combination of hardware method with surgical treatment
Permanent occlusion	<ol style="list-style-type: none"> 1. Apparatus method (all of the above apparatus; arc widely used non-removable devices, possibly reversed arcs etc.). 2. The combination of hardware with the surgical method (removal of some teeth, compactosteotomy). 3. The surgical method. 4. Orthopedic method (prosthesis).

Deep bite. The etiology, pathogenesis, clinical features, diagnosis, prevention and treatment.

Deep bite, like an open bite, is a kind of vertical malocclusion. Normally, the front teeth of one jaw with the same name should overlap the other by no more than 1/3 the value of the tooth crown. For most people, the upper teeth overlapping the lower. If there are other relevant characteristics - it will orthognatic bite. In larger amount of overlap can talk about the deep overlap. It is advisable to allocate a deep incisive and insightful overlap (traumatic) bite (Fig. 29). Norma contains pathology as its opposite. Development of the pathology of the norm subject to the laws of dialectics, in particular, the law of transition from quantitative to qualitative changes.

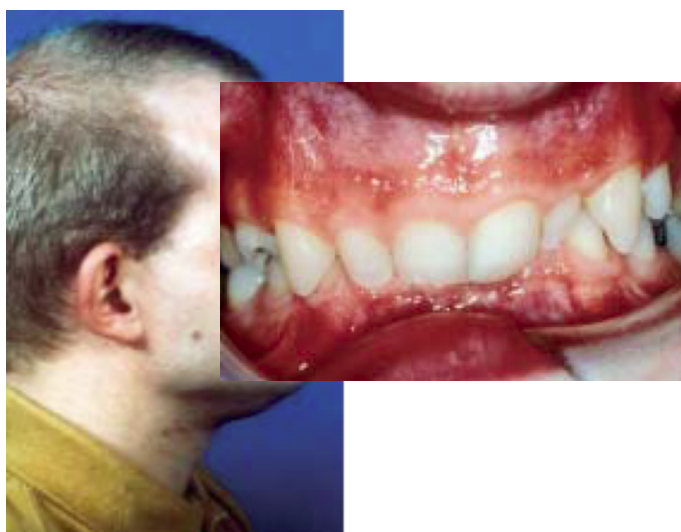


Fig.35 Deep bite

In the normal overlap (no more than one third of the tooth crown) can be normal chewing function. The increase in the degree of overlap leads to an increase in blocking the lower jaw, and, therefore, a gradual reduction of the chewing function. However, at a certain stage front teeth lose contact, the lower teeth injure the mucosa of the anterior hard palate, there is a new quality - traumatic deep bite. The whole process is accompanied by the development of the dysfunction of the temporomandibular joints, manifested by pain, crunch, clacking of the joints, facial pain, muscle pain, impaired hearing, headache, dizziness, parenthesis, and dry mouth. All this is due to the pressure of displaced distal articular heads up and on unsuitable land to such pressures glenoid fossa, infringement of the articular disc, compression of blood vessels and nerves in the area glazed gap. The deep bite is very often associated with sagittal views of malocclusion (most often with distal occlusion).

Causes of deep bite are very diverse. Plays an important role hereditary factor.

Among the causes of acquired nature, should be distinguished: the destruction and removal of posterior teeth, bad habit of sucking and biting fingers and various items, disruption of breathing, swallowing and speech. In addition, it is essential to increase one of the dentition (supernumerary teeth, diastema, been delayed primary teeth,

macrodentia) or decrease of one of the dentition (adentia, retention, microdentia). The causes leading to the development of sagittal forms of malocclusion, in most cases lead to the development of deep bite. Clinically manifested deep bite shortening the lower third of the face, deepening the furrows of the supraperiosteal, and features inherent to the mesial and distal occlusion. In addition to changes in the temporomandibular joints, as described above, generally, an overload of periodontal front teeth.

Treatment of deep bite advisable to coordinate with key stages in the development of dentition: the eruption of primary teeth, the first permanent molars, incisors to change the time constant, the eruption of the second permanent molars. Basic methods of treatment: elimination of the causes that prevent dentoalveolar lengthening in the posterior region, the creation of obstacles to dentoalveolar lengthening in the anterior region, the correction of the teeth and the shape of the dental arches, normalization of the growth of the jaws and the position of the lower jaw.

During the period of temporary occlusion is necessary to restore damaged primary teeth with fillings, inlays, crowns, restoration, pin designs. To eliminate the bad habits we recommend the use of vestibular plates and positioners. If necessary - plastic tongue-tie. With early removal of temporary teeth - removable denture prosthesis prevention, while appropriate to raise the bite on artificial teeth in the lateral sectors and create a contact sharp edges of the lower anterior teeth with the bite block platform prosthesis for the upper jaw.

At the end of the period of temporary occlusion and the initial period of replacement of bite to the lateral separation of the teeth, especially in the eruption of the first permanent molars. A. Katz proposed to use this overstates the bite is non-removable crowns (κ) - temporary molars. Currently used successfully removable aligners. Later in the removable bite plate bite block is used widely, activators. With the combination of deep bite with mesial occlusion recommended device Bryukl (can be combined with mental sling with head cap).

In the long term replacement in permanent dentition and bite to the above treatment methods appropriate to add the arc apparatus with intermaxillary traction.

Deep bite in adults often develops as a result of the gradual destruction and loss of posterior teeth. This process usually lasts for many years. There is a gradual restructuring of the jaw bones, muscles, temporomandibular joints, the parallel development of the secondary dentition strain (so-called phenomenon of Popov Godon) exacerbates the situation (Fig. 36).

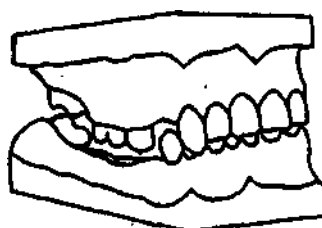


Figure 36. The Popov-Godon phenomenon.

Unfortunately, the general practice is allowed often mistake - a cross-sectional shape and the restoration of normal relations dentition dentures. To correct orthodontic training before prosthetics. This is usually done through a variety of removable bite guards plates (or activators). It is advisable to simultaneously move the lower jaw to 2-3 mm. After adjustment myotathic reflex (4-6 weeks) if necessary, can be taken further displacement of the mandible. It was only after the patient's full adaptation to the normal position of the lower jaw can proceed to a permanent prosthesis. Adaptation period, of course, depends on many factors (age, the duration of the deformation reactivity, etc.). To clarify this term is convenient to use the following simple method. On the next reception in a casual conversation orthodontic device is removed. And if the machine without the lower jaw remains in the same position as that of the machine, there was a restructuring miotatic reflex, you can proceed to the next stage of treatment.

In the presence of the blocking deep bite advisable to start to normalize the shape of the upper dentition, and then proceed to the treatment itself deep bite.

Prevention of deep bite multifaceted. The most important thing - is the formation of normal morphology and function of the masticatory apparatus on the basis of a healthy lifestyle. Baby needs a period of temporary occlusion recommend eating solid foods, conduct all appropriate preventive measures that prevent carious tooth decay. The elimination of bad habits, the normalization of the functions of chewing, breathing, swallowing and speech, if necessary, plastic tongue-tie. All the preventive measures listed in presenting the material on sagittal malocclusions are necessary and in the prevention of deep bite, because these anomalies are usually combined.

Table 7. Scheme action for the prevention and treatment of deep bite

	Methods of prevention and treatment
Temporary occlusion	<ol style="list-style-type: none"> 1. Digital massage, especially for a fan-shaped arrangement teeth. 2. Exercises for the orbicularis oris muscle in a fan-shaped discrepancy between the teeth. 3. Exercises for the muscles, pushing the lower jaw with her distal position. 4. Solid food. 5. The elimination of bad habits, the normalization of the functions of respiration and swallowing. 6. Prosthetics in the destruction and lack of deciduous teeth. 7. Vestibular plate positioners.
Mixed occlusion	<ol style="list-style-type: none"> 1. The combination myogymnastics with the instrumental method. 2. Apparatus treatment (vestibular plate positioners bite block plate activators, at the end of - non-removable devices arc, etc.). 3. Combination hardware method with surgical

Permanent occlusion	<ol style="list-style-type: none"> 1.Apparatus method (all of the above devices, and extensive use of non-removable devices arc). 2.Combination hardware with the surgical technique. 3.Prosthetic method
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Transversal malocclusion

Cross bite. Etiology, pathogenesis, clinical, diagnosis, prevention and treatment.

Cross bite - is transversal anomaly relationship dentition. There are many different classifications of cross-bite, for example, the following definitions: a scythe, vestibular bite, buccal bite, lingual bite, lateral, buccal, joint cross bite, lateral forced bite, laterognathia, laterogenia. (Figure 37.)



Fig 37 Cross-bite.

In the classification

I.I.Uzhumetskene (1967) are the following forms of cross-bite:

1. *Buccal cross bite.*

a) without displacement of the mandible (one-sided due to narrowing of the upper dentition or the jaw, the lower extension of the dentition or the jaw, a combination of these symptoms, as a result of two-way bilateral symmetric or asymmetric narrowing of upper teeth or jaw, the expansion of the lower dentition and jaw combination this reasons) ;

b) with the displacement of the lower jaw to the side (parallel to the mid-sagittal plane; diagonally);

a) Match - a combination of features of the first and second versions.

2. *Lingual cross bite.*

a) one-way;

b) two-sided.

Both these species due either extension or upper jaw dentition or lower dentition restriction or jaw, and a combination of these features.

3. *Combined (bucco-lingual) cross bite.*

In the classification of transversal malocclusions WHO released three forms: the posterior cross bite, lingual bite posterior teeth of the lower jaw and the offset from the centerline.

If symmetry is broken cross bite person limited lateral movement of the lower jaw, which leads to lower efficiency and chewing overload supporting tissues of the teeth. Quite often disturbed function of the temporomandibular joints, especially the displacement of the mandible. The displacement of the mandible is determined during the inspection (wide mouth opening and closing - is possible symptom of deviation, the lower lip frenulum offset relative to the bridle of the upper lip, as well as the displacement of dentition) or TRG.

The reasons for the development of cross-bite variety. By stunting jaw bones can cause inflammation, reduced chewing function (even with multiple caries, and even more so for early removal of teeth), congenital cleft etc. Contribute to an increase in the jaw bones macrodonty, supernumerary teeth, macro glossy, etc. The shift of the mandible is due to bad habits, chewing on one side, hypoplasia of one half of the jaw or its ascending branch, for example, Franceschetti syndrome, etc. Of great importance in the development of cross-bite has carious tooth decay process is to remove them and untimely prosthetics, breach of abrasion of hard dental tissues, impaired balance myodynamic.

Treatment of cross-bite depends on the shape, its level of development, as well as the patient's age.

In the interim period and the early replacement of bite to eliminate bad habits and normalize the function of respiration, remove been delayed time and the teeth ground off not erased hills of deciduous teeth. One effective method of treatment in this period is myogymnastics foils, masticatory muscles and circular muscles of the mouth. Be sure to prosthetics in significant destruction of the teeth. The need for quality dental treatment and chewing on both sides. Of orthodontic appliances used to overstate the crown or bite mouth guards, reinforced by temporary molars, removable aligners (or plate) with inclined planes in the lateral parts (especially the displacement of the mandible), positioners, extending plate, activators, and functional regulators. Perhaps the use of the chin sling with uneven (asymmetric) of the elastic rod.

In the final period of change and the initial stage of permanent dentition may use the above devices and used the combined method of treatment (hardware-surgical).

In the permanent dentition treatment can be carried out through a combination of removable and fixed devices (including arc with a bracket system). Perhaps the use of a simple non-removable device (ring on the upper and lower posterior teeth with intermaxillary traction).

In the treatment of posterior cross-bite (buccal cross-bite) rubber rings for fixed hooks soldered to the oral side of the rings mounted on the upper side teeth, and for hooks soldered to the vestibular side of the rings mounted on the lower posterior teeth. It is necessary to divide the ranks of removable dental device. When posterior cross bite with displacement of the mandible, we successfully combine the removable and non-removable equipment. On the upper jaw overlaps the removable device with a sliding lock (screw) and a hook in the molar area on the side where the lower jaw is moved, the machine must disassociate bite. The lower set of teeth superimposed arc apparatus. From canine mandible to the hook on a removable device, superimposed on the upper jaw, superimposed intermaxillary elastic traction (rubber ring). Figure 38.



Fig. 38 Orthodontic devices used in the treatment of cross-bite.

In adults, often after orthodontic treatment is carried out rational prosthesis.

In the permanent dentition often to the listed methods of treatment are added surgical methods (removal of some teeth, compact osteotomy). Prevention of cross-bite should be done as early as possible, prevention methods depend on the above reasons, which lead to the development of cross-bite.

Table 8. Schema action for the treatment and prevention of cross-bite

Periods of dentition	Methods of prevention and treatment
Temporary occlusion	<ol style="list-style-type: none"> 1. The elimination of bad habits, the normalization of the Functions of breathing and swallowing. 2. By grinding the cutting edges and mounds of deciduous teeth. 3. Myogymnastics depending on the type of pathology. 4. Prosthetics for early removal of temporary teeth. 5. Positioners, removable aligners. 6. Pickup sling with head cap and a rubber traction
Mixed occlusion	<ol style="list-style-type: none"> 1. The combination myogymnastics with the instrumental treatment. 2. Apparatus treatment (positioners activators tray with inclined planes at the end of - non-removable arc apparatus and their combination with movable devices, etc.). 3. Combination hardware with the surgical technique.
Permanent occlusion	<ol style="list-style-type: none"> 1. Apparatus method (all of the above devices, widespread use of non-removable devices arc and blend them with removable appliances). 2. Combination hardware, with the surgical technique. 3. Prosthetic method

Questions for part 2.

1. Classification anomalies of individual teeth.
2. Occurrence of abnormalities of teeth color. Etiology, pathogenesis, clinical features, treatment.
3. Anomaly shape of the teeth. Etiological factors of occurrence. Differential diagnosis with anatomical variants of the norm.
4. Styloids teeth. Floor and Epidemiology and I arise, clinic and treatment.
5. Fusion teeth. Floor and Epidemiology and I, pathogenesis, clinical features, diagnosis.
6. Types of fusion teeth. Features of orthodontic treatment.
7. Influence drain teeth on the formation of the dental arches and occlusion.
8. Supernumerary teeth. The clinical and radiological diagnosis. The tactics of orthodontic treatment.
9. Adenty. Classification. Diagnosis. Intraoral and extraoral symptoms in multiple and fully edentulous.
10. Metody treatment of edentulous.
11. Reasons disturbance of teething. Types and forms of retention.
12. Ways output teeth of retention. The indication for their use.
13. Classification anomalies of position of individual teeth. Floor and I Epidemiology and pathogenesis.
14. Tortoocclusion. Epidemiology and pathogenesis. Features of treatment.
15. Diastema. Clinical and radiographic classification. The causes.
16. Treatment of diastema.
17. Vestibular position of the teeth. Etiology, pathogenesis, clinical features, treatment.
18. Palatal position of the teeth. Etiology, pathogenesis, clinical features, treatment.
19. Crowding of the teeth. Etiology, pathogenesis, clinical features, treatment.
20. Indication for mass removal of teeth.
21. Features of treatment dystopia and transposition of teeth.
22. Anomaly dental arches. Floor and Epidemiology and I, pathogenesis, clinical features, treatment.
23. Role pathology of the upper respiratory tract and the development of rickets in strains of bite, their prevention methods.
24. Role artificial feeding in the development of malocclusion.
25. Bad habits in children, their role in the pathogenesis of dental-jaw deformities.
26. Endogen and exogen factors that negatively affect the development of the teeth-jaw apparatus.
27. Etiology, pathogenesis, clinical features, diagnosis, prevention and treatment of distal occlusion in the time period.
28. Etiology, pathogenesis, clinical features, diagnosis, prevention and treatment of distal occlusion in replacement period. The effectiveness of the use of supportive therapy.
29. Features of orthodontic treatment of distal occlusion in a constant period in children and adults. Possible complications. Indications for removing teeth and other surgical interventions.

30. Etiology, pathogenesis, clinical features, diagnosis, prevention and treatment of mesial bite in the time period. The role of heredity in the origin of this anomaly.

31. Clinically-radiological forms of mesial occlusion. Which classifications are displayed. Features of treatment of this anomaly in the change of periods of occlusion.

32. Features of orthodontic treatment mesial bite in the form of a constant period in children and adults. Indications for surgical interventions.

33. Etiology, pathogenesis, clinical features, diagnosis, prevention and treatment of deep bite in the time period. Features of treatment.

34. Clinically-shaped X-ray deep bite. Which classifications are displayed. The advantages of hardware treatment in replacement period of occlusion.

35. Features of treatment of deep bite in a constant period in children and adults.

36. Etiology, pathogenesis, clinical, prevention, diagnosis and treatment of anterior open bite in the time period. The role of the normalization of nasal breathing in the prediction of orthodontic treatment.

37. Clinical-radiological forms of open bite, their diagnosis and treatment of an interchangeable term.

38. Features of open bite treatment in a constant period. Tactics of treatment in children and adults. Indications for surgical interventions.

39. Etiology, pathogenesis, clinical features, diagnosis, prevention and treatment of cross-bite in the time period.

40. Classification, which displayed the cross-shaped bite. The value of clinical diagnostic tests.

41. Features of treatment of cross-bite in a constant period.

42. Clinical-diagnostic trials by Eshler-Bittner. Their value.

43. Clinical diagnostic tests by LV Illina-Markosian. Their value.

44. Surgical intervention in treatment of orthodontic patients.

45. Methods stimulation of orthodontic treatment (surgery, physical therapy, biological), their essence, the testimony.

Third part.

Prosthetics in the child age

The destruction and the lack of teeth leads to a violation of all the functions of the maxillofacial area, to disrupt the process of digestion. In addition, the result of tooth decay is the development of secondary deformities of dentition (the Popov-Godon phenomenon) and alveolar hypoplasia, resulting in a variety of dentofacial anomalies and, in turn, further exacerbates the disruption of the dentoalveolar apparatus.

A pioneer in the development of dental and jaw problems prosthetics for children in our country was L.V.Ilina-Markosian. Prior to her studies was generally thought that the teeth for children under the age of majority to restore is not necessary.

Indications for dental prosthetics during temporary occlusion:

1. violation of the integrity of crowns due to aplasia and hypoplasia of enamel temporary molars;
- 2 availability repeatedly fillings temporary molars with weakened walls, anatomical shape can be restored by fillings;
- 3 subtotal and total post-traumatic defects without opening the cavity of the tooth;
4. trend of dentoalveolar elongation and deformation of the occlusal plane;
5. erasure of hard tissues of primary teeth in the dysplastic Stanton-Kapdepona;
6. removal of temporary teeth for a year or more before the eruption of permanent;
7. defects of dentition in multiple edentulous;
8. after surgical dental defects and jaw;
9. violation of the process of becoming a height of bite on the first and second stages of physiological recovery in connection with the early destruction and removal of temporary molars;
10. the existence of dentofacial anomalies in conjunction with defects of the dentition;
11. Violation of speech function and the presence of harmful habits (paving the language in the area of the defect);

12. significant underdevelopment of the upper jaw with congenital cleft lip and palate.

Indications for dental prosthetics during the change of bite:

1. violation of the integrity of the crown of the first permanent molars due to enamel hypoplasia;
2. repeated filling of the first permanent molars with a significant loss of dental hard tissues, anatomical shape which cannot be restored seal;
3. subtotal and total post-traumatic defects crowns 11, 12, 21, 22, 31, 32, 41, 42 teeth;
4. disturbance of the process of becoming a height of bite on the 2nd stage of its physiological recovery in connection with the early destruction and removal of the first permanent molars;
5. the presence of dentofacial anomalies in conjunction with defects of dentition;
6. abnormal abrasion of the dysplastic Stanton-Kapdepon;
7. Multiple or edentulous permanent teeth;
8. Single or multiple retention of permanent teeth in the alveolar bone;
9. shrinkage defects dentition in the horizontal direction, as well as reducing interalveolar distance in the vertical direction;
10. defects of dentition and jaw stunted growth or some of its parts;
11. the formation of defects in the jaws and dentition postoperative interventions for tumors and tumor-like formations.

Indications for dental prosthetics in adolescents with permanent dentition:

1. extensive destruction of crowns of teeth due to caries, enamel hypoplasia, fluorosis, abnormal abrasion, wedge-shaped defects, anatomical shape and height which can be recovered filling of;
2. anomaly aesthetic prosthetics for the development of form, color, and sometimes the situation of individual teeth;
3. Multiple congenital adentia permanent teeth;
4. prosthetics to launch impacted teeth;
5. disturbance of the process of becoming a height of bite on the 3rd stage of physiological recovery in connection with the early removal destroyed second permanent molars;
6. replacement of defects of dentition;
7. replacement of jaw defects after surgery for tumors and tumor-like formations.

Dentures children with temporary occlusion.

The largest number of children in need of temporary occlusion prosthesis due to premature removal of temporary molars. This, at first glance, a harmless operation leads to significant negative consequences, reduce the height of occlusion, reduced activity of the growth zones at the site, blocking the movements of the lower jaw, the formation of secondary deformities of dentition, reduced chewing efficiency, worsening conditions for the development of permanent teeth.

Basically, if such defects of dentition used laminar removable dentures. They should not hinder the growth of alveolar bone and jaw as a whole (although it is impossible to exclude). Laminar prostheses prepared with a fairly large basis, mostly without clasps and other fixation devices: between arttion gum and alveolar process creates a space (about 1-1.5 mm) to reduce the obstacles apposition growth of the jaws. Apposition also contributes to the growth of the jaws thickened edge of the prosthesis. T.V.Sharova believes that setting artificial teeth shifts the rudiments of the permanent teeth. L.V.Ilina-Markosian (1951) allows for the formulation of artificial teeth on plane. Dentures during temporary occlusion is recommended to replace after 8-10 months. The presence in the present high-quality filling materials reduces the need for restoration crowns during temporary occlusion. However, with significant destruction of the temporary crown of the tooth, and even more so in the absence of high-quality filling materials to be manufactured artificial crowns. The vast majority of these crowns are made of chrome-nickel steel. It is advisable to avoid treatment of dental hard tissues. This is possible by using so-called thin crowns (0.14-0.15 mm). These crowns minimum over-occlusion and due to its elastic properties is well cover the neck of the tooth. The edge of the crown only goes up to the neck of the tooth, not plunging into the gingival sulcus. Separation is carried out teeth or ligature wire or rubber rings.

Dentures in children during mixed bite

Defects crowns temporary prosthetic teeth as well as in the period of temporary occlusion.

Another assumption that the prosthetic crowns the defects of the permanent teeth to hold off until the completion of the formation of the root, is not tenable, because the result is that the formation of the root and yield secondary deformation. With a significant defect in the coronal part, especially after the injury, you can use the following method: the first phase produced a temporary crown is a thin-walled metal, which restores the tooth and holds the medical bandage, after the formation of the root of the permanent crown is made.

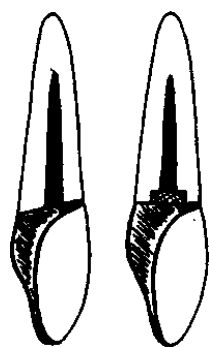
On the permanent teeth are prepared tabs (metal, plastic, porcelain), artificial crowns pins and teeth. Manufactured in such structures is fundamentally little different from that of adults. Pencil-type structure are prepared only to the teeth with the formation of roots. Design used a variety: simple the pin tooth, a tooth with the pin tab, the pin tooth outer ring, Stump Pin design. Fig. 39 shows the various designs of peg-teeth used for the permanent teeth.

Dental defects during removable bite most often replaced with removable plate dentures. Their design is not fundamentally different from the structure that is used during temporary occlusion.

Of fixed restorations during the change of the bite can apply a system of spacers (Fig. 40) and the sliding bridges (Fig. 41)

The greatest problems occur in the prosthesis in children with complete absence of teeth, especially at the lower jaw

Fig.39. Design



peg-teeth

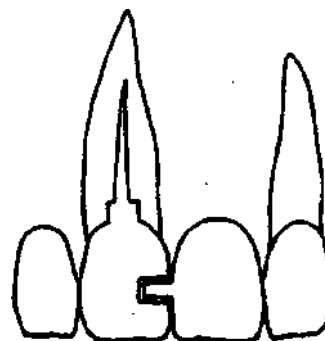
The main cause of the complete absence of teeth is anhydrotic ectodermal dysplasia. Congenital rudiments of teeth leads to a dramatic underdevelopment of alveolar bone. Usually, conduct design edges of the print using a thermoplastic mass, taking into account the following areas of possible expansion of the basis: front-lingual (sublingual) pocket in the incisors and canines on the lingual side, taking care not to bridle language osteo-mucoso-muscular pocket in the molar and the buccal the area between the buccal and labial bridles. After the fit and design of the edge of a custom tray is removed using a functional impression functional tests Herbst.



Fig.40. Fixed preventive bridge



Fig.41 Sliding (spacers)



Dentures should be replaced from 11 to 15 years after a year and a half years, from 15 to 18 years old - and a half or two years. After 18 years in most cases, you can upgrade to the usual "adult" prosthetics.

Features of prosthetic treatment for complicated defect dentition.

In the presence of impacted teeth over-bite with their artificial replacement teeth. The pressure at the site of the prosthesis impacted tooth increases blood circulation and accelerates the resorption of the alveolar process. If the loss of deciduous teeth occurred within the year prior to the physiological changes of deciduous teeth fixed, then replace these teeth by prosthetics are not appropriate. At the wrong the closing of the first permanent molars, standing behind the intense eruption of teeth, displacement of the mandible and other functional disorders of the indications for prosthetic expand.

Dent alveolar prosthesis effectively when there is no displacement of the adjacent and opposing teeth. If the deformation takes place, it is necessary orthodontic treatment, which may combine with prosthetics. In the temporary occlusion denture is used for fixing orthodontic appliances that correct form of dental arch: the spreading screws bite block

area, ramp, etc. By reducing the bite it evenly to overstate the artificial teeth prosthesis for the upper jaw and bite block on the site of the lower front teeth.

In a removable bite breach caused the premature loss of temporary or permanent teeth are more pronounced. At the same mesial inclination or the misalignment of teeth corps leads to a shortening of the dental arch. Such a violation of correct movement of the teeth in the correct position and pose in the dental arch is enough space for the permanent teeth and their germs. For the lateral displacement of the distal anterior and - side use springs and vestibular arch different designs, screws, longitudinal cuts or sectorial basis. Increasing the bite on artificial teeth prosthesis makes orthodontic treatment and assists dent alveolar shortening of the teeth.

If you decrease the dentition dentures are made with expanding screw. The loss of one of the central incisor, if the space for it in the dentition is not enough due to the inclination of adjacent teeth, use a denture extends to the longitudinal cut. To transfer the pressure screw on the nearby, central incisor used ribbon or round clasp for this sawed between denture clasps and an artificial tooth. In case of loss of both central incisors extend the period for the installation of artificial teeth by expanding prosthesis, with sawing between artificial teeth. In the permanent dentition it is replaced by the testimony of non-removable prosthesis. With a significant mesial shift of the teeth and lack of space for permanent teeth, or their germs create it by successive extractions method Hotz.

In the permanent dentition change in the dental arch, after the loss of some teeth, goes in different directions, causing the occurrence of malocclusion. To treat them with the use of dentures orthodontic appliances, as well as non-removable orthodontic devices (devices with Angle intermaxillary traction). Significant differences occur after the loss of some of the lower teeth at the distal and individual top - with mesial bite. In such cases, extend the indication for removal of individual teeth on the opposite jaw.

At the mesial bite early loss of one or more of the upper front teeth creates the conditions for the return of the incisal overlap or cross-bite. Orthodontic treatment should be directed to the vestibular movement of the teeth and create a place for the lost upper teeth. Defect lower dentition in a side portion is used for shortening of the lower dental arch.

In multiple tooth loss, dental defects replaced with dentures, replacing them with non-replaceable in 1-2 years after the correction of dental abnormalities.

If no lower incisors, upper, usually orally shifted and this leads to elongation of dentoalveolar. In this case, artificial teeth extend. With these constitute one or another form of an inclined plane. After vestibular deviation upper incisors and achieving contact with the inclined plane of dental cusps recommended to use this prosthesis to normalize the vertical position of the incisors. To reduce the overload of individual teeth or groups of them, and to distribute the chewing pressure, align occlusal erased curve by selectively cutting edge of front or posterior tubercles.

Orthodontic and prosthetic care for congenital and acquired defects of the maxillofacial region.

The defects of the maxillofacial area can be congenital or acquired. Birth defects and defects acquired during childhood, dramatically violate all the basic functions of dentition (chewing, breathing, swallowing, speech). There is a secondary deformation of the jaw bones, dentition, the relationship is broken tooth rows, the function of the temporomandibular joints. Defects associated with the message with the oral nasal cavity, are, moreover, a rapid dysfunction otolaryngology, they develop inflammatory processes.

The most common birth defects such as cleft lip, alveolar process and palate. (Fig. 42)



Fig.42 Unilateral cleft lip, alveolar process of the palatum

Children with congenital cleft at birth should be at the dispensary to receive comprehensive treatment, in which a very important place to take orthopedic and orthodontic care. Specialized assistance should be provided to these children before the first feeding.

For the diagnosis of cleft lip and palate in the clinic using clinical and anatomical classification.

Classification of cleft lip by Kolesov.

1. Congenital hidden cleft lip (unilateral or bilateral).
2. Congenital incomplete cleft lip:
 - a) Without deformation skin and cartilaginous part of the nose (one-or two-way);
 - b) The deformation of skin and cartilage of the nose Division (one-or two-way).
3. Congenital complete cleft lip (one-or two-way).

Classification of cleft palate by Kolesov

1. Congenital cleft palate:
 - a) Hidden b) incomplete, and c) are complete.
2. Congenital cleft soft and hard palate:
 - a) Hidden b) incomplete, and c) are complete.
3. Congenital complete cleft soft, hard palate and alveolar process (single or double sided).
4. Congenital cleft alveolar and anterior hard palate:
 - a) Incomplete (one-or two-sided), and b) the full (one-or two-sided).

But maybe different relationship forms cleft lip and palate.

Anatomical and functional disorders.

In the process of formation, development and growth of the bones of the face and jaws occurs in some cases, violations of varying degrees: missing the entire body or a part of a complete absence of the person, the absence of the middle portion of the upper jaw, the intermaxillary bone, nose (synophthalmia), lack of mandible (agnathia). These disadvantages tend to be incompatible with human life, so children die in the first days after birth. Such heavy disadvantages are relatively rare. Most often there is a group of birth defects in which the initial stage of the development of education a person laying its parts held true, but the latest development is difficult because there are: - congenital cleft face (oblique, transverse, and cleft lip and palate);

Clinical examination of children with facial birth defects. Clinical examination of children with Chloe is based on the effective use of preventive and curative measures in all periods of the development of the child. At this time, both in Ukraine and abroad, well-organized network of health care centers to provide care for children with similar disabilities.

Tasks centers: 1) the surgical removal of the main anatomical abnormalities, 2) orthodontic correction of deformities, and 3) reduction of speech correction, speech therapy, respiratory training and lingual articulation, 4) maintenance of normal physical development of the child.

Clinical examination of children with Chloe should be the date of birth and up to 14-15 years. Tasks performs clinical examination together a group of experts, but in the same hospital: orthodontist, surgeon, internist, pediatrician, neuropsychiatry, ENT-specialist, physiotherapists, speech therapists, medical geneticist.

The center clinical examinations are:

- Out-patient department with medical and diagnostic facilities for all these professionals,
- Surgical dental clinic,
- Boarding-type nursery garden where children are placed at an early age and preschool children for a period of 2-8 months. The severity of deficiencies Chloe dictates the amount and duration of treatment and prevention.

Cleft lip and alveolar process.

.Morphological violation

1. Postoperative scarring and residual defects.
2. A flattening of the front portion of the upper dental arch.
3. The narrowing of the dentition (often asymmetric) with unilateral cleft, expressed mainly in the upper premolars: expansion of the lower dental arch in the molar region.
4. The tendency to underdevelopment of the lower jaw and its retro position.
5. Adentia or hypoplasia of the upper lateral incisor in the cleft of the alveolar process.
6. The presence of supernumerary teeth in the cleft.
7. Turning on the axis of the upper central incisor, which borders the cleft and lateral deviation.
8. Palatal inclination of incisors on the side of non-unions.
9. Dentoalveolar shortening in the canine, which borders the cleft.
- 10 .The tendency to develop cavities.

Functional Disorders

1. The limited mobility of the upper lip, scarring after chioplastics.
2. Lack of compression of the lips in connection with the shortening of the upper lip on the side of the cleft.
3. Paving the tip of the tongue in the mouth area of the defect and alveolar bone.
4. Violation nibbles food.
5. Incorrect swallowing.
6. Mouth breathing.
7. Habit hand covering his mouth.
8. Impaired function of facial muscles.

Aesthetic violation

1. A flattening of the upper lip and a violation of the profile shape of the face.
2. Contour violation of the red portion of the lips (line Cupid), a defect of the upper lip, her lack of closure from the bottom.
3. Wrong position of the upper incisors, visible when smiling.
4. The deformation of the wing of the nose (unilateral or bilateral).

Treatment

Plastic with unilateral cleft lip at 2, 5-3 months, bilateral - 3-5 months. After heylorinoplastic anomalies position of individual teeth is eliminated by use of massage or instrumental treatment by conventional methods. Orthodontic treatment involves removal on the testimony of supernumerary teeth, redress front teeth, alveolar bone defect replacement and lateral incisor by prosthetics, observation of the formation of permanent dentition. After surgical intervention is necessary to direct all forces to prevent narrowing and shortening of the upper jaw. In the early period of the temporary and removable bite mainly used removable appliances with different screws and labial bumpers. Since the eruption of the first permanent molars, you can use non-removable bi or quad helix. In the older age bracket used appliances.

Cleft soft or hard and soft palate.

Morphological violation

1. Birth defects, or post-operative on the soft and hard palate.
2. The irregular shape of the tongue or the absence of the soft palate.
3. Scarring and shortening of the soft palate.
4. Protrusion or retrusion of the front teeth, their close location.
5. The narrowing of the upper dentition.
6. Deep incisive overlap.
7. The trend toward early carious destruction of the upper jaw and loss.

Functional Disorders

1. Violation of the pronunciation of sounds (snuffle).
2. Impaired function of mastication.
3. Incorrect swallowing.
4. Respiratory failure.
5. Voltage facial muscles and tongue during swallowing.

Aesthetic violation

1. Wrong position of the upper front teeth visible when smiling.
2. Not closing the lips.
3. Broad nasal bridge.

4. Voltage facial muscles during chewing, swallowing (the presence of transverse indentations in the skin of the nasal bridge, and the range of angles of the mouth and chin).

Treatment.

Comprehensive and consistent care to spend with the child's birth until the formation of the facial bones. Orthodontic treatment is carried out in two stages: pre-operative - the method of Mc Neil, the use of floating obturator, creating favorable conditions for uranoplastics by reducing the size of the hard palate. For this purpose, the machine is used for the information of the palatine processes. Duration of use of the device from 4-6 months to 1 year, depending on the child's age, the gap width, the degree of deformation and the underdevelopment of the palatine processes, the general condition of the child. After surgical intervention should be directed at the prevention measures narrowing and shortening of the upper jaw. In the early period of the temporary and removable bite mainly used removable appliances with different screws and labial bumpers. Since the eruption of the first permanent molars, you can use non-removable bi or quad helix. In the older age bracket used equipment.

One-way-through cleft lip, alveolar ridge and sky.

Morphological violation

1. The presence of scars on his upper lip, soft and hard palate.
2. Reducing the depth of the mouth vestibule side crevices stock through a defect in the transitional fold mucosa.
3. The presence of residual defects in the sky.
4. The presence of supernumerary teeth in the cleft of the alveolar process; adentia lateral incisor.
5. Rotation axis and literary deviation of the upper lateral incisor, which borders the cleft, the presence of diastema.
6. Dentoalveolar shortening in the canine, which borders the cleft and palate-medial location.
7. The narrowing of the upper dentition, more pronounced on the side of the cleft.
8. A flattening of the front portion of the upper dental arch, palatal position of cutters.
9. Typical forms of violations of dentition.
10. Folding, the language, the presence of reflections crowns of the teeth.
11. The trend toward early carious tooth decay and loss.
12. The tendency to shift the mandible.
13. The shortening of tongue-tie.

Functional Disorders

1. Mobility limitation scar-modified upper lip.
2. The shortening of the upper lip on the side of the cleft, its partial defect.
3. Speech disorder (snuffle).
4. Incorrect swallowing.
5. Mouth breathing.
6. Slow chewing.
7. Habit hand covering his mouth.
8. Improper positioning of the tongue during a function at rest (interdental location of the tip, low position of his back).
9. Voltage facial muscles during swallowing.

10. Folding of the language, the presence of reflections crowns of the teeth.
11. The trend toward early carious tooth decay and loss.
12. The tendency to shift the mandible.
13. The shortening of tongue-tie.

Aesthetic violation

1. Violation of the wing shape of the nose on the side of cleft a deviated septum.
2. The deformation of the red portion of the upper lip, flattened lip, the defect is not closing the lips.
3. Wrong position of the front teeth, visible when smiling.
4. The concave facial profile.
5. Voltage facial muscles.

Treatment.

: A child needs to provide assistance on the basis of emergency, using preformed plate, which can be made individually for each child by laboratory methods, and kits are used preformed standard orthodontic appliances. Until operation used obturator and apparatus for information palatine processes.

For early correction form the upper jaw can use the Mac-Neil.

The period of temporary teeth: treatment is to stimulate the growth of the upper jaw. Effort should be directed at normalizing the functions of dentition, using physical therapy and orthodontic appliances. At the end of the period of temporary teeth is necessary to take measures to arrest growth of the lower jaw length with the caps with the chin sling and extra oral rubber traction. The controller features Frenkel type III.

Period removable bite. Radical uranoplastics. After 2 weeks, referred to a speech therapist. The driver information of the sky with a protective plastic. Question remove supernumerary teeth are located in crevices, to decide after evaluating radiographs of the upper jaw. Supernumerary teeth prevent further narrowing of the upper jaw. To restore functions using functional - current and functional - guiding orthodontic appliances.

Permanent dentition: the treatment of adolescents with very pronounced dentoalveolar anomalies carried out mainly by the non-removable orthodontic appliances, devices with an inclined plane, intermaxillary traction. At the close location of the teeth, the presence of sagittal gap between the incisors and the normal value of language in order to remove some of orthodontic treatment the teeth, usually the first permanent molars. Treatment for adults is the most successful after compactostectomy moved in the teeth.

Two-way-through cleft lip, alveolar process and palate.

Morphological violation

1. The presence of bilateral scar on his upper lip after cheiloplastics in the sky - after uraniscoplastic; deformation of the wings of the nose.
2. Reducing the depth of the mouth vestibule of a front portion of the upper jaw.
3. Anomalies of the provisions of the intermaxillary bone, or lack thereof.
4. Typical forms of violations of the upper dentition dentoalveolar shortening in the area of upper canines, and premolars often.
5. The sharp, often symmetrical, the narrowing of the upper dentition is more pronounced at the site of the canines and premolars.

6. The axis of rotation of the central incisors of the upper jaw and the vestibular-oral deviation.
7. Adentia or hypoplasia of the upper lateral incisors.
8. The presence of supernumerary teeth in the alveolar cleft and at their edges.
9. The tendency to a breach of the lower jaw.
10. Malocclusion.

Functional Disorders

1. Such as that of patients with unilateral cleft lip through, alveolar process and palate.

Aesthetic violation

1. Protrusion of the upper lip at the front location of the intermaxillary bone, it's flattening
2. Symmetrically marked impairment of nose.
3. Retrusion, hypoplasia or absence.
4. Such as that of a one-way through the cleft upper lip, alveolar process and palate.

Convex facial profile with protrusion of the intermaxillary bone, concave - with retrusion or her absence.

Providing care for children with cleft

Treatment is complex. Should be carried out in specialized centers by clinical examination of children with birth defects Chloe. In providing assistance to participate: pediatrician, dentist surgeon, an anesthetist, an orthodontist, ENT, speech therapist, psychologist, and other specialists. Optimal period beginning orthodontic treatment not. It depends on the severity of the morphological, aesthetic and functional disorders.

Preoperative orthodontic treatment

- Use removable orthodontic obturators.
- The use of orthodontic appliances is aimed at correcting the situation of individual teeth.
- Removal of supernumerary teeth indicated.
- Treatment of malocclusion.
- If necessary prosthetics.
- Myogymnastics to the soft palate. Massage.
- Monitoring the formation of permanent dentition.

Temporary occlusion of teeth - after veloplastics treatment strategy as in crosses unilateral cleft upper lip, alveolar process and palate.

Replacements bite - the expansion of the upper jaw with the use of screws, springs, RME. Due to the absence of the intermaxillary bone shows devices - prostheses. Fixed devices with intermaxillary traction. Retention period lasts until after the change of teeth.

Prosthetics using laminar prostheses with artificial teeth and clasps. Fixed bridges. Removable acrylic dentures with the second dentition. Clasp dentures with the second dentition.

Traumatic injuries to the teeth and jaws in children.

Birth injury in maxillofacial area of the newborn may occur during obstructed labor, when applied to a child while passing through the birth canal or the use of forceps, vacuum extractor. In this case, such damage cannot be diagnosed immediately, as the consequences may only become clear over time. The most difficult consequence of birth trauma may become stunted growth of facial and jaw bones, deformation of the face (especially seen in the zygomatic bone and the lower jaw).

The first signs of strain can be seen after the 1st or 2nd year of baby's life. A possible limitation of motion in the temporomandibular joint. Carry out rehabilitation activities for children, the best in professional dental chair or specialized clinics.

The damage occurs when teeth fall during children's games, sporting events, etc.

It may be a temporary and permanent teeth in children, isolated or combined with a fracture of the mandibular body. This may cause severe complications such as necrosis of the dental follicle or growing zone, and hence the formation of the root of the tooth is broken or even inflammation of the periodontal tissues and bones. Recognize: Contusion, sprain, fracture of the tooth.

Classification of damage to the teeth (by AA Kolesov)

1. Bruising of the tooth (without damage and with damage to the neurovascular bundle)

2. Dislocation of the tooth (without damage and with damage to the neurovascular bundle)

-Incomplete

- Full

- Impacted

3. Fracture

-Tooth crown (within the enamel, dentin zone, with no damage or injury)

-Cervical tooth (above or below the bottom of the periodontal pocket)

-Tooth root (transverse, oblique, longitudinal, comminuted, combined):

Around the neck, in the middle of the root, at the apex.

4. Trauma tooth follicle

Bruising of the tooth. Always accompanied by hemorrhage into the pulp and periodontium. The first sign of periodontal injury is a change in color (dyeing) of the tooth in pink. Bruising can cause necrosis of the growing zone of the root, chronic periodontitis.

Treatment - in traumatic periodontitis requires immobilization of the tooth by changing the color crown - trepanation of the tooth followed by a rational treatment.

Dislocation of the tooth. Always accompanied by damage to the periodontal tissues and tear, moving teeth in the dentition, the tooth moving, the X-ray - expansion of the periodontal ligament space, projection bias size of the tooth.

In childhood dislocation is more common in deciduous teeth, as their roots are short. Dislocation may be complete or incomplete, sometimes accompanied by a fracture, but the root remains in the hole or beyond.

Complaints often replaced tooth position after the injury, pain when touched. A partial dislocation seen some "reduction" of the tooth to the adjacent, the crown of his moves in one, and the root - in the other direction. The crown may be at a different plane, and not on a level with the adjacent teeth. It may be even offset axis, and sometimes a prominent vertical displacement of the tooth. The tooth may become longer and prevents displacement of the clamping jaws or teeth.

Impacted dislocated when the tip of the root damage sponge holes, causing significant destruction of the jaw bone. Impacted tooth crown looks shorter, so this tooth below the adjacent, or cannot be seen.

On radiographs of the roots of impacted tooth it is longer or shorter than the other teeth - Welding of the oblique, periodontal slot is not visible.

Treatment of dislocation of the tooth depends on the state of primary teeth. Permanent teeth should always be maintained. Tooth attached to a natural position, manipulation is performed under local anesthesia, very carefully. Then the tooth is fixed wire-bus or bus from the quick hardening plastic. Tooth extraction is possible only with a sharp inflammation (especially in the dairy bite). At full dislocation replantation better to spend up to 72 hours after the injury (this should be anti-tetanus serum). The effect of treatment depends on the timing and severity of the injury. Can resorption after tooth replantation.

Fracture tooth typically occurs at the crown, neck or root. In the diagnosis necessarily x-ray examination. The fracture can pass along or obliquely relative to the axis of the root. Possible dislocation of the tooth at the same time.

Fracture of the crown is possible to damage or no damage to the pulp of the tooth. Light part of the crown fractures treated by grinding, polishing and impregnation of the resource. At the close of the pulp to be imposed cap with calcium-paste.

Significant bits broke off, with no pain in the pulp of the tooth are not yet evidence of its destruction. It is therefore necessary to check in 2-3 months pulp sensitivity to stimuli.

Damage, accompanied by opening the cavity of the tooth to be treated by maintaining the vitality of the pulp, taking into account both time after the injury, and the state of the tooth root. Treatment involves the use of biological pastes and medical bandage temporary hold an artificial crown. But with significant periods after injury, the pulp must be removed or all, or only the coronal part of it. Very carefully, also solved the question of removing and preserving the pulp is formed when the root of the tooth. Root fracture through the neck of the tooth with a complete loss of the crown provides for the preservation of the root, followed by the manufacture of pin tooth.

Root fracture may also be at a different level. Necessary to clarify the diagnosis by X-ray, as a possible displacement of the fragments of the tooth root. Pulp at the turn of the root is dying is not always the case.

At the turn of the root of a baby tooth without displacement of fragments is necessary to fix its kappa plastic for 3-4 weeks. With a significant shift possible to fix the fragment with a crown to the permanent tooth is not damaged.

Permanent tooth root fracture in the neck needs to be preserved and the sealing of the root canal using a pin. The appearance of inflammation in a well need to remove the root of the tooth.

In some cases the possible preservation of fragments of the tooth root and the connection pin which is fixed in the channel-phosphate cement.

Thus, the basic state of trauma teeth are:

- Elimination of the traumatic factor
- The restoration of tooth position (reduction)
- Provision of rest (stabilization)
- The introduction of serum
- The elimination of the defect.

Fractures of the jaws:

- Traumatic or pathological
- Full or part time
- Indoor or outdoor
- Direct or indirect
- Transverse, longitudinal, straight, oblique, zigzag shaped
- Single, double, triple.
- The upper or lower jaw

Trauma jaws and facial bones

Children fracture of the lower jaw is much less common than in adults, as it is smaller in size, well covered with soft tissue, and this weakens the force of the injury. Children's bones are thinner adult, less strong, but it is more flexible, and the periosteum is thicker and well vascularized, so fractures occur rarely. Traumatic injuries to the periosteal enhance periodontal bone layers at the site of trauma.

The children are fractures of the type "green twig" or "Willow twig" Sometimes, there are only a sub periosteal bone fractures, without damage to the periosteal. In such cases, there is no displacement of fragments.

Possible traumatic osteolysis in the jaw bones in children with separation of the head in the joint. It is known that a complete separation of the articular process on the neck with a dislocation and displacement of the head accompanied by a complete resorption of the bone of the head. This becomes clear in 2-3 months after the injury. Later on, at the age of 10, there is deformation of the distal end of the bone in the form of a saddle, there is a significant facial deformation.

Clinical manifestations of fractures of the jaws - the pain, dysfunction, traumatic swelling, deformity, abnormal mobility. These signs must be recognized, not always accompanied by fractures. On palpation: it may be crepitus and mobility of the fragments, so the jaws palpation should be performed with caution. Fracture is often accompanied by bruising.

Diagnose broken jaw in children is not easy, as he often subperiosteal, without the express displacement of fragments. Therefore, the possible unforeseen complications in the future as a facial bone deformities, impaired function. That is why it is always necessary to X-ray examination to confirm the diagnosis - a broken jaw.

Treatment: at the turn of the jaws in children more difficult than in adults because of the small size of crowns of the teeth. Especially since the destruction of the follicles of the permanent teeth eliminates the use of a bone joint.

That's why in childhood fractures jaw is better to treat fast-curing plastic (pre-lubricated with petroleum jelly tissues of the mouth, moistened with cold water bus or soda solution than prevent burns from plastic).

Thus, the fixed jaw parts with plastic tires which are made directly in the mouth. Anesthesia is necessary for repositioning the fragments.

Terms consolidation of fractures of jaws in children shorter than that of adults, almost half, particularly good healing, if the fracture is not influenced by the follicle. Otherwise, they are necrosis of the tooth germ.

Characteristically, the younger the child, the faster the healing of bone fractures.

According to statistics, the most common injury in children has a fracture of the anterior maxilla and mandible. Thus there is a rupture of the mucous membranes of the mouth, soft tissue sprains teeth.

The provision of medical care involves repositioning the jaw fragments, suturing the soft tissues and splinting fast setting plastic.

Fractures of the upper jaw are along the lines of Le Fort I or Le Fort II and are often accompanied by traumatic brain disorders. These injuries occur when falling from a height or traffic injury.

Treated like jaw fractures reposition fragments in the required natural position and locking plastic laboratory individual tires with extra oral mustache.

Heavy child's condition after the injury with brain disorders and damage to other organs of the upper jaw is fixed bandages and reposition fragments is best done after the improvement of the general condition of the injured child.

Mandibular fractures are more common in boys after 7 years as a result of sports injuries.

The characteristic is sub periosteal fractures without significant clinical signs of mobility without strain or jaw fragments or significant displacement, destruction of the soft tissues of the face and the main brain concussion. Diagnosed with the fracture clinic and the corresponding analysis X-ray examination.

Treatment of fractures of the mandible includes fixation of fragments of tooth, periodontal tires. With the localization of the fracture in the central or lateral to the department of children 3-7 years old is better to use staples or bus-bus-Tooth tray made of plastic, and children after 7-12 years - Tooth plastic tires that are produced directly in the mouth. After 12 years - treatment in adults.

At the turn angle of the jaw in the area for children up to 12 years, it is better to use the bus or out of self-hardening plastic laboratory periodontal bus with a ramp and an elastic chin sling.

At the turn of the branches in the area without moving the jaw fragments using the bus with a ramp and an elastic chin sling, but the displacement of fragments - it is better to use the rostral mount their tires with loops of orthodontic wire, which is fixed to the teeth the usual way, or quick-hardening plastic.

Double fracture of the body jaw is better treated with wire loops and tires with rubber traction tires are sometimes made of plastic.

Joint fracture on one or both sides without bias - for younger children - One bus is used for the senior - bus with a ramp and a plastic candy bar to prevent displacement.

In the case of displacement of fragments of children 3-12 years of age use the tire-caps and plastic hinges at the top and bottom jaw. And after 12 years, treatment is carried out as adults - with wire loops and tires with rubber traction.

Surgical treatment is only in severe cases.

Complication of trauma, it is:

- Mandibular hypoplasia
- Malocclusion
- Anomalies of the teeth
- The lack of teeth on the fracture line
- Pain in the joint.

Therefore, the need for timely rational treatment.

Damage to the soft tissues of the face:

Accompanied by a violation of the integrity of the skin or mucous membranes with the appearance of wounds or without them (possible hematoma) may accompany trauma teeth or jaws.

As a rule, there is swelling of the soft tissues, and significant swelling hide fractures of jaws.

Especially dangerous wounds from bites of animals (dogs, predators) in the area of the nose, ears, lips, inflammation as well as rabies.

Therefore, animal bites must be accompanied by vaccination.

In the mouth, lesions may be in English, cheeks, palate. They can have a strong bleeding considerable depth with foreign bodies.

Treatment of injuries of soft tissues consists of a primary surgical treatment of the wound and channeling blind seam period 24-48 hours after injury, and against antibiotic - 72 hours. Especially economically relate to the tissues around the orifices (mouth, nose, eyes). All the procedures under general anesthesia or local anesthesia.

The processing steps: The processing isotonic washing solution fu-racillin, enzymes, antibiotics. Treatment of bone wounds, stop bleed-ing, removal of sharp edges, a comparison of the fragments of soft tis-sue fixation. Wounds with soft tissue defects tamponed napkins. Chil-dren take on a clinical account, especially the surgeon and or-thodontist.

General indications for plastic surgery in childhood.

When the primary surgical treatment of facial injuries in children seams impose a fine needle, a thin thread of artificial synthetic fibers (nylon, nylon) without stretching the skin, better the separated skin near the wound edges closer to the free edges. With a significant de-fect in tissue should be used for the plastic seams convergence of the wound edges and a reduction in the future of the scar. In this case, justified the use of primary plastic surgery: plastic with local fabrics, patches, free skin grafts, etc..

Complications of orthodontic treatment. Relapses dentition anomalies and deformities, the value retention period in the treatment of dentofacial anomalies and deformities, orthodontic retention devices.

In addition to the therapeutic effect of orthodontic appliances, they are like a foreign body, and have an adverse effect. Among the side ef-fects of orthodontic appliances are: mechanical, thermal, biological (microbial), chemical, and allergic. Adverse mechanical effect may be due to the bad quality manufacturer of the device or with inadequate forces. Chemical influence is most often associated with the effect of residual monomer plastics at part of its polymerization. Allergic condi-tion also often associated with the components of plastics. Adverse thermal effects associated with increasing temperature under remov-able orthodontic bands, which creates favorable conditions for the de-velopment of micro-organisms. All these issues are partially covered in other sections of the manual and are well described in textbooks on orthodontics and prosthodontics. We elaborate on the question of the most important, in our view, the unfavorable effects of orthodontics (removable and fixed) devices associated with the deterioration of sanitary conditions of the mouth, is that we have identified above as biological (microbial) effects.

The works of many authors proved that dentofacial anomalies and deformations sharply deteriorating hygienic conditions of the mouth, chewing function, the possibility of self-cleaning, lead to an increase in affection dental caries. In addition revealed that the presence of dentofacial anomalies and deformities greatly reduces the effectiveness of the pathogenesis prevention of dental caries. Thus, annual growth during fluorine prevention caries in children with anomalies and deformations in two times higher than that in children without anomalies. When the instrumental orthodontic treatment worsening sanitary conditions of the mouth and the associated increase in affection dental caries and deepening of inflammation of tissues surrounding the teeth naturally increase. Oral hygiene, tooth decay and infestation with the degree of inflammation of the regional periodontal vary depending on the mode of wearing removable orthodontic appliances.

In addition to the sharp deterioration of sanitary conditions of the mouth, orthodontic appliances cause a mechanical trauma and disrupt the dynamic equilibrium of the metabolic processes of dental hard tissues. It was found that the solubility of tooth enamel by clasps significantly higher than in intact enamel sections. Increasing the solubility of tooth enamel using removable orthodontic appliances may reach 14%. It can be concluded that orthodontic treatment, along with its main thrust - the restoration of the function of masticatory system, will inevitably lead to negative consequences in the form of amplification of major dental diseases. The reason for this is the emergence of a foreign body in the mouth, deterioration of the process of self-purification, the impact of the material system, metabolic disorders, and homeostasis in the oral cavity and, as a consequence, the violation of its sanitary conditions and the occurrence of favorable conditions for the development of dental caries and periodontal diseases. Therefore, orthodontic dental treatment must be seen as the emergence of new risk factors on major dental diseases.

Hygiene education.

Hygiene education in its entirety should be covered completely, all children undergoing treatment and medical supervision at the orthodontist. The optimal start for health education and training of rational methods of oral hygiene is the time between visits to the child orthodontist and orthodontic appliance imposition of a structure.

In carrying out hygiene education methodologically sound is a parallel education and training for parents, who subsequently take over the function constantly monitors the observance of child hygiene recommendations. Lessons on hygiene education are desirable to also educators and medical staff of those pre-schools and schools that are attended by children with abnormalities and deformities of dentition. Responsible for all the activities on hygienic education of the population are orthodontic department head or Orthodontist.

The venue of hygiene education in the optimal variant is room hygiene and prevention of children's dental clinic, which must be equipped with all necessary for the implementation of two major components of the components: health education and promotion of rational methods of teaching oral hygiene. In the absence of hygiene rooms for these purposes can be used in the area of hygiene orthodontic department or

office. Making and fitting rooms and corners of hygiene and prevention are held to the standard version or adapted depending on local conditions.

In addition, Orthodontist in the time allocated to health education, conducts related activities with the teaching staff of pre-school institutions and schools.

In carrying out hygiene education should make full use of the two main sections of this work: health education activities and training rational individual methods of oral hygiene.

Training in rational oral health in complex hygiene education is mainly aimed at children undergoing orthodontic treatment or medical supervision. However, as hygiene education must be present and parents. Education is carried out in several stages, starting with the presentation of hygiene practices in large phantoms, then - direct education of children and parents monitor the quality of hygiene and make the appropriate corrections, giving specific recommendations on the selection of individual instruments and objects of oral care and orthodontic equipment. Education is desirable relatively conduct training in the form of group manipulation of children with the same type of pathology and treatment of the equipment or as individual sessions with the child. After school, every child and parent must be provided with the appropriate reminder.

GUIDELINES FOR SELECTION OF HYGIENE

As a result of the deterioration of self-purification of the mouth, soft plaque accumulation in areas of retention, increased deposits of tartar can occur inflammation in periodontal tissues and impaired metabolism in the hard tissues of the teeth, accompanied by a predominance of demineralization and the emergence of the initial caries. The advisability of a hygienic and prophylactic means, a reasonable change their view of the impact on the soft and hard tissues of the oral cavity is largely predetermines the prevention of these disorders. In practice, the system is fully justified itself periodic replacement of hygiene, acting mainly on the hard tissues of the teeth to make them more resistant to caries and periodontal soft tissues in order to prevent inflammation. An indispensable condition for this is the meticulous observance of all rules of hygiene, brushing and intensity of individual selection of toothbrushes.

As an exemplary scheme for the application of orthodontic equipment, we can recommend the use of fluoride toothpaste for 10 days (increases the resistance of enamel, affect the soft plaque), then for the next 10 days - salt or herbal supplements containing pastes that affect soft periodontal tissues; complete monthly cycle - the 10-day brushing phosphate calcium-containing pastes, reinforcing the crystal lattice of the enamel. In the application of structures that contribute to an increased accumulation of soft plaque in the scheme must include an enzyme-containing pastes, melts acquired secondary structure.

On hygiene measures during orthodontic treatment should pay particular attention. Brushing your teeth need 2 times a day for 3-5 minutes, thoroughly cleaning all surfaces of the teeth and interdental spaces. After each meal to rinse your mouth. Great attention should be paid to cleaning and orthodontic apparatus, which, like the teeth should be cleaned in the morning and evening. Removable orthodontic appli-

ances advisable to clean tooth powder exhibiting good abrasive properties. In this case, care must be taken during the liberation of plaque, saliva residue of those surfaces that are adjacent to the mucous membrane of the mouth.

Should not recommend eating with removable orthodontic appliances. Use of removable orthodontic appliances during a meal causes a sharp deterioration in the state of oral hygiene, and reduced chewing efficiency, which can lead to gastro-intestinal diseases. This is especially true for vehicles, uncoupling bite in certain areas.

Significant impact on oral hygiene has a mode of wearing removable orthodontic appliances. Best with a removable orthodontic treatment device is the mode of wear for 18-20 hours a day with a 4-6-hour break, which does not lengthen orthodontic treatment helps to restore the dynamic balance in the mouth, impaired applying orthodontic appliance. Break should be done while the child is in school, because removable orthodontic apparatus occupies a large volume in the mouth, violates diction. It connects the child when responding to school, and in communicating with other children.

SPECIAL MEDICAL EVENTS DURING ORTHODONTIC TREATMENT

Children with dentoalveolar anomalies undergoing orthodontic treatment, are at risk of tooth decay in relation to tooth decay and periodontal disease. Monthly monitoring methods allow time to identify carious lesions and periodontal disease. Orthodontic treatment should be initiated only after a thorough dental health and conduct of anti-inflammatory therapy. Children with periodontal disease should undergo orthodontic treatment is a priority. Children with decompensated form of tooth decay, along with the treatment of destructive changes of hard tissue, recommended treatment of focal demineralization of calcium-phosphate-containing gels.

The method of conservative treatment of primary caries involves the appointment of a combined fluoride, "sealing" enamel, and calcium-phosphate-containing gels that restore normalcy in the crystal lattice. The patient is recommended to brush your teeth with a stiff toothbrush remineralizing gel 2 times a day for 3 minutes for 14-30 days. This is accompanied by the removal of enamel irreversibly changed area without affecting the continued healthy tissue is carried out simultaneously remineralizing therapy. The presence of dentofacial anomalies, and conduct hardware orthodontic treatment may contribute to the development of periodontal disease in the form of gingivitis and periodontitis, during which more often chronic. Character therapeutic measures depend on the stage of an inflammatory process, form, weight and flow.

SPECIAL METHODS OF CONTROL OF THE MOUTH AND TISSUE

To consolidate the skills of oral hygiene, to determine the quality of the activities and make the necessary adjustments, determine the mode of prevention and treatment programs need to periodically use the meth-

ods of control. Follow-up examinations should be carried out before the start of orthodontic treatment (to determine the initial state of the mouth), 10 days after application of orthodontic appliance (this period is reasonable adaptation to the child's orthodontic appliances), and then monthly for the duration of orthodontic treatment. The most acceptable forms of such control are:

1. *intensity of tooth decay* (KPU index, k , $CPU + kn$).

Index CPE: K - number of decayed permanent teeth P - constant number of filled teeth, I - to the amount of missing (deleted) permanent teeth.

Index KN: k - the number of time carious teeth, n is the number of time filled teeth.

Index CPE + KN - intensity of dental occlusion in the period of change. There are three degrees of caries activity: Compensated form sub-compensated and decompensated form. Compensated form - the index of the (CPU) does not exceed the average intensity of dental caries in children of this age in the region. Subcompensated form - the intensity of caries in the indices CPU, k greater than the average for three sigmal deviation. Decompensated form-performance CPU, k exceed the value $M +38$ or actively progressing lesions detected dem-ineralization and initial caries.

2. *Diagnosis of early manifestations of dental caries* is conducted by the method of EV Borovsky, P.A.Leusa, L.A.Aksamit (staining of foci of demineralization of 2% aqueous solution of methylene blue). After a thorough hygienic cleaning and drying the surface of the teeth to a visual inspection. In the presence of focal demineralization and on some parts of the initial caries tooth enamel look dull. Teeth are carefully isolated from the saliva. On the test surface with a cotton swab is applied to the dye (2% aqueous solution of methylene blue) for three minutes. The excess dye was removed by rinsing. Paint, penetrating the enamel areas with increased permeability is not eliminated by rinsing and scraping excavator. The color intensity is determined on a 10-grayscale dipole having different shades of blue color from dark-blue (as 100%) to light blue (0). Allocated three degrees of color spots: light - from 0 to 30%, average - 40 to 60%, high - from 70 to 100%. In cases where the color is uneven, the assessment is carried out to the highest indicator. The different degree of staining spots indicates activity pas ontological process in the spot.

3. *presence of inflammation in the soft tissues* is determined by Schiller-Pisarev, which is vital staining of glycogen gums, the content of which is greatly increased when it is chronic inflammation. The intense color of the gums after the application of the solution Schiller-Pisarev indicates inflammation.

Periodontal condition is evaluated using papillary-marginal-alveolar index (PMA), which includes the following estimates: P - inflammation of the papilla (1 point), M - inflammation of the marginal gingiva (2 points) A - an inflammation of alveolar gums (3 points). The value of the index is given by:

$$PMA = \frac{\text{total points}}{3 \times \text{number of teeth}} \times 100 \%$$

4. *Definition of oral hygiene* is performed according to the method. Fedorova, Volodkina.

As a test, hygienic cleaning teeth using a lip stain the surface of the lower six front teeth with a solution of erythrosine or Schiller-Pisarev. Quantitative evaluation is performed on the five-point system:

- 5 points - painting the entire crown;
- 4 points - painting 3/4 crowns;
- 3 points - painting half-crown;
- 2 points - painting fourth crown;
- 1 point - no staining.

amount of points

IG=-----,

n

IG - hygiene index

n - number of teeth.

In children undergoing orthodontic treatment, it is advisable to paint coating on all the teeth, especially those who are in contact with the elements of orthodontic appliance. The normal hygiene index should not exceed 1-1.5 points.

Thus, the use of monitoring and timely conduct of the complex medical and preventive measures during orthodontic treatment can prevent or greatly reduce the negative impact of ongoing interventions in the hard tissues of the teeth and marginal periodontitis.

Depending on the condition of the oral cavity is expedient to appoint a differentiated preventive agent in the instrumental treatment of dento-facial anomalies. Thus, all patients who will be Apparatus treatment of dentofacial anomalies, it is advisable to recommend a set of preventive measures to include individual training courses on oral hygiene, monitoring the level of quality. Must assign one of the preventive means (calcium phosphate fluoride gel, activated remineralizing solution) in two courses (before orthodontic treatment, and during it.) Indications for use of fluoride gel using removable orthodontic appliances are the low level of oral hygiene (IG > 2.8 points), inflammation in the regional periodontal (PMA > 7%), large size and high intensity staining of carious white spots FER-test = 4.0. The procedure is to cover all the teeth in a day or gel daily for 15 days to 1 year. For children who are undergoing treatment with fixed orthodontic devices (for example, straight-wire technique), the course of preventive fluoride-containing gel is recommended only during orthodontic treatment. In this case, the testimony E fluoride gel to the appointment of the IG is > 2.8 ball catch, PMA > 7.0%.

Containing calcium phosphate gel is administered as brushing your teeth 2 times a day for 15 days to 1 year. The use of the gel, using a replaceable units appropriate for the IG = 2.4 points, PMA = 6.5%, TER-test > 6.0 points. When using a non-replaceable units of calcium phosphate gel containing appropriate to appoint at IG = 2.4 points, PMA = 6.0%, TER-test = 5.0 points.

Activated remineralization solution appropriate to prescribe the use of removable and fixed devices in the following cases: IG = 2.3 points, PMA = 6.0%, TER-test = 3.0 points.

Prevention of relapse in orthodontic treatment.

Treatment of dentofacial anomalies in itself time-consuming task. This task is complicated by the possibility of relapse. Even a perfectly correct treatment given requires secure the results as may return abnormality by not fully completed the restructuring of dentition and having a place of elastic fabrics. You can identify the main causes of relapse in common anomalies.

With the development of diastema relapse contribute hereditary disease, low bridle attached broad upper lip, not spent prosthetics to complete orthodontic treatment for edentulous lateral incisors and microdentia, macroglossia.

When you rotate around the axis of the tooth relapse contributes to stress fiber bundles surrounding the tooth is rotated. This voltage lasts a very long time (about 8 months). In this regard, it is advisable to start the rotation of the tooth to the final formation of the root apex and to rotate with hypercorrection (prof.Horoshilkina 1994).

The close position of the front teeth may be exacerbated as a result of the subsequent eruption of the third molars, especially in the lower jaw.

The main causes of recurrent distal occlusion are not to eliminate bad habits, impaired balance myodynamic muscles lips, cheeks and tongue.

Relapse mesial occlusion often associated with hereditary disorders, macroglossia, and a shortened frenulum language, the eruption of lower third molars (especially in the absence or small size of the upper third molars).

Recurrence of deep bite is more common in the horizontal growth of the jaws, muscle hypertrophy, raising the lower jaw, bad habits of sucking, swallowing dysfunction and breathing.

Relapse of the open bite contribute to bad habits sucking, mouth breathing, infantile swallowing, impaired articulation of language, type of vertical growth of the jaws.

In order to exclude the possibilities of relapse after orthodontic treatment is carried out retention. Retention period is intended to build on the results of active treatment, although in this phase of the intermaxillary dynamics may vary, and some changes in the position of the teeth (Tugarin, Persin, Porohin, 1996).

Duration retention period depends on many factors: patient age, type of applied orthodontic equipment, the presence of unresolved morphological and functional disorders.

On this issue, there have been discussions. Some researchers believe that this period should be slightly longer than the period of active treatment, or equal to him. There are totally opposite point of view that one once a week at night retentive apparatus must be worn for life.

Such a contradictory point of view difficult choice of tactics especially beginners to experts. In applying the retention of removable devices are empirical method, gradually decreasing while wearing the device under constant medical supervision.

Retention devices are:

1. Treatment devices in an inactive state

2. Special devices:

a. removable (retention plate, candy bar machine, positioner)

b. non-removable (palatal or lingual arch, molded retainer or wire).

Quite often used one jaw plate with vestibular arc on the upper and lower jaw, close-coupled devices - activators (with skeletal forms of anomalies, especially Engle class 2), positioners (especially with the rough treatment).

Retainer (removable retention devices) is a palatal (lingual) side at 2/3 the height of the tooth crown from the cutting edge. After locking the retainer on the composite medical device removed after 40-60.

Ospanova, Hazina, Belokurova et al (1997) recommend the following scheme of wearing a removable retention devices: the first 3-6 months - 24 hours a day, six months later - at night, and then for 6 months - through the night and, finally, one time per week throughout life. Elastomeric tray (or positioners) are shown especially in bruxism and dysfunction of the temporomandibular joints. After treatment, it is advisable to use an open bite positioner. Orthodontist is advisable to observe patients for 4-10 years after the end of treatment (prevention of a possible relapse).

Genetically determined abnormalities of the maxillofacial region.

Yet Charles Darwin noticed that every internal cause is ultimately dependent on external causes. So it is strongly differentiate dentofacial anomalies for hereditary and congenital extremely difficult. Craniofacial anomalies, including morphological changes in the teeth can be caused by chromosomal aberrations (abnormal karyotype - numerical and structural aberrations), gene mutation, as well as joint action of many genes and environmental factors" (Yu.A.Belyakov, 1993). Ultimately, any anomaly dentition bears and certain hereditary principle.

Amelogenesis imperfecta (enamel hypoplasia) and are based on, as a hereditary factor, and the factor of influence of the environment. All hereditary disease of enamel on clinical and morphological characteristics can be divided into three main groups: hereditary enamel hypoplasia associated with the violation of its matrix; hereditary enamel hypoplasia associated with the violation of the terms and processes of its maturation; hereditary enamel hypoplasia associated with its hypocalcification.

Combined disturbance of enamel and dentin is a syndrome (a disease) Stanton-Kapdepon. Go to the dentist treated children with complete or almost complete absence of enamel. Usually when cutting tooth enamel part is available, but it was quickly chipped, dentin hard erased. When additionally, as a rule, detected dental cavity obliteration and channels. The roots of teeth are usually curved, thin, short, the phenomena of hypercementosis. Affects the temporary and permanent teeth. Hereditary component, usually, well traced.

In a broad sense, inheritance dentition anomalies should be understood and the reduction of teeth and alveolar bone. This issue is set out above.

Anhydrotic ectodermal dysplasia - a serious hereditary disease characterized by pathological changes of derivatives ectoderm. Key features: anhidrotic, hypotrichosis, multiple adentia, dysplasia face and skull. There is a considerable amount of birth, including hereditary, cranial dysostosis. This disturbed neurocranialis strand formation of the brain in addition to which, formed elements of the midface, I and II

branchial arches, including dentition. Typical example of this pathology is the craniofacial **dysostosis (Crouzon's disease)**. In this case, there is a skull deformity and its grounds, face and teeth. In particular, suffers from the middle part of the face. There is a characteristic appearance of the patient: an underdeveloped midface, proptosis, shallow orbits, eye, converging strabismus, a broad forehead, wide and flat nose. The upper jaw is usually significantly underdeveloped, the lower jaw is generally biased, often a public or cross bite, gipodonty, crowns, dental anomalies, the curvature of the roots of the teeth.

Mandibular-facial dysostosis (Franceschetti syndrome). Usually marked hypoplasia of one half of the front of the skull (hypoplasia or absence of half of the lower jaw, sometimes only the ascending branch, sometimes articular process). Often there is aplasia of the ear, the auditory canal atresia and deafness.

Significant changes and a variety of dental systems arise in chromosomal diseases. Chromosomal disease is a group of diseases caused by structural or numerical chromosome aberrations that are visible in a light microscope. Many chromosomal diseases. We have a brief tutorial for an example only touch on some of them, in which there are characteristic changes in the maxillofacial region.

Trisomy of chromosome 21 (Down syndrome). Maxillo-facial features are: rounded shape of the head, sloping forehead and narrow, flat face, flat nasal bridge, a short nose, excess skin on the neck, dysplastic ears, mongoloid of the eyes, increased folded tongue. These patients are usually delayed teething, quite often there is enamel hypoplasia, abnormal shape of crowns of teeth, periodontitis. As a rule, there is hypotension masticatory muscle dysfunction of the tongue and lips, often a mid-face hypoplasia, open and cross bite.

Monosomy of chromosome X (Turner syndrome) is characterized by impaired sexual differentiation in women (low growth, infantilism, hypoplasia of the gonads, concomitant somatic abnormalities of the heart, kidneys, etc.). In these patients as impaired enchondral and periosteal bone formation. The person often has the characteristics of an old man, the corners of his mouth dropped, often almond-shaped eyes, ptosis of eyelids, strabismus, astigmatism, blue sclera. There is a shortening of the roots of the teeth and their early teething (especially permanent), resorption of the roots of the teeth, microdentia, edentia lateral incisors of the upper jaw. Quite often - distal position of the lower jaw, delayed growth of the facial skeleton, the maxillary and mandibular retrognathia (however, with a prevalence of mandibular), a decrease in body length of the upper jaw, the branches and the body of the mandible. These patients are often found unusual feature - a split of the root (the bottom third) molars of the lower jaw.

Chromosomes XXV (Klinefelter's syndrome) - a male hypogonadism. Characterized eunuchoid physique, tall, various gonadal violation.

In this syndrome often have the form of the anomalies of the teeth, microdentia, adentia, retention and dystopia canines of the upper jaw, sagittal increase in the size of the body of the mandible and its ascending branch, the high position of the temporomandibular joints, osteoporosis, facial bones, prognathy maxillary and mandibular.

In conclusion, the topic should be noted that many commonly dentofacial anomalies (mandibular macrognathia, diastema, deep bite, etc.), along with external factors are often due to hereditary factor that is extremely important to consider when planning preventive and curative measures.

Modern technology, methods and means of eliminating the dentoalveolar anomalies and deformations.

At present, around the world use a wide range of removable and fixed orthodontic appliances. As part of this lesson we will look at one type of fixed and removable orthodontic equipment that has a great potential in the future.

The founder of the modern non-removable orthodontic equipment Arc is an American physician Angle. In 1886, he proposed a universal device, which is based on resilient arc cross-section 1.14 mm. The arc at their ends, which are nuts, introduced in the tube, reinforced by the support molars. Additional fixation and the ability to move the teeth by means of wire ligatures and elastic rubber traction.

In the future, Angle has created the first examples of "Edgewise-art", with glue on the teeth of the rings locks with flat slot into which a rectangular or square arc.

Modern designs of locks (braces) consist of the following elements (Figure 43):

1. A basic platform, through which the bracket is attached either directly to the enamel or welded to the orthodontic ring which is fixed to the teeth;
2. Groove, wherein the arc is fixed;
3. Wings, serving for fixation of the arc with wire or elastic ligature.

In order to form correct dentition when using standard edgewise-use equipment necessary to produce arcs of curves in horizontal, vertical, and sagittal planes.

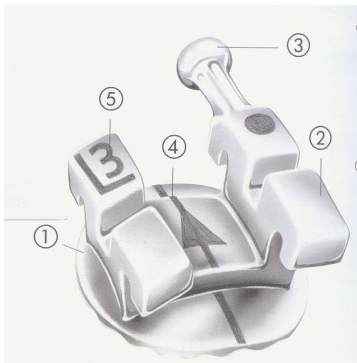


Fig. 43. Castle (bracket) 1.-bearing area; 2.-wings; 3.-hook, 4 - slot; 5 - marking the bracket.

Materials for the arch wires are gold, steel, cobalt-chromium, titanium-molybdenum ligated alloys and titanium-based alloys, and nickel. Here are some examples of arch wires used nowadays. In the first phase of treatment is often used multi-arc wire rope for leveling dentition (such as "flex" - an arc of round, square and rectangular cross-section). Very widely adopted arc of nickel-titanium alloy so-called metal alloy with "memory." The position of the brackets on the labial surface of the teeth affects a variety of factors (the final tooth position, size, shape, nature of closing the teeth-antagonists, the shape of the dentition, etc.). However, there are two main points to be observed: the vertical axis of the bracket must coincide with the longitudinal axis of the tooth, each bracket should be located at a suitable distance from the

occlusal surface of the tooth (the distance to the middle of the slot).
Fig. 44 indicated that distance.

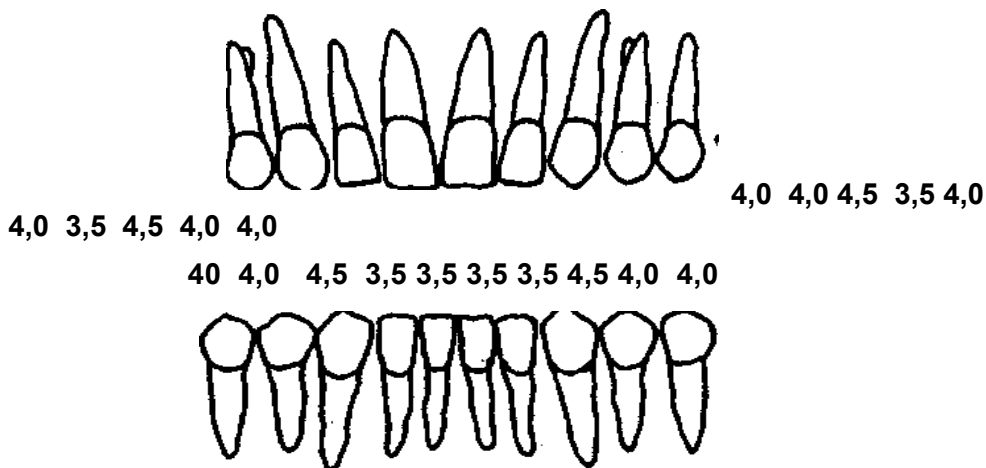


Fig. 44. Distances for fixing brackets.

When working with edgewise-technique widely used elastic traction rubber rings and a variety of spring (Fig. 45).

To prevent movement of the molars in the mesial direction can additionally use a lip bumper (Fig. 46).

On labial bumper, located on the eve of the oral cavity in the anterior region, is mainly circular muscle of the mouth and chin muscle.

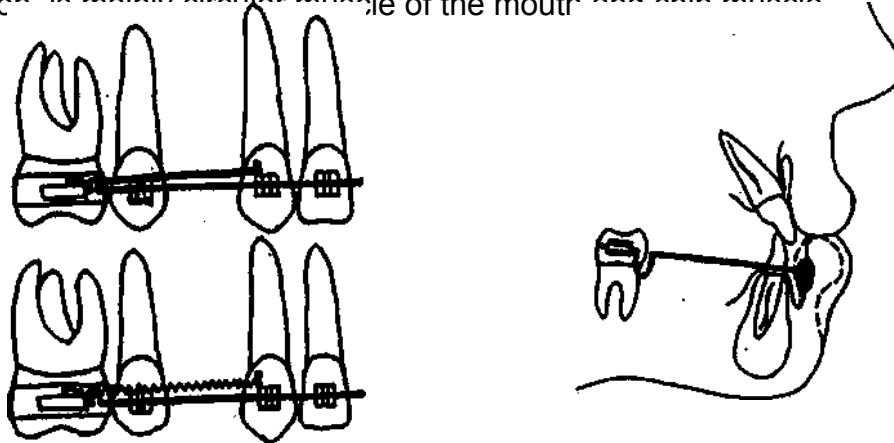


Fig. 45. Elastic traction class I

Fig. 46 Lips bumper

The most widely used around the world found a straight-wire technique. It was first applied in 1969, the American orthodontist Andrews. The elements of this technology are the arc (mostly rectangular) and the special design of braces. Through the application of programmed braces move the teeth and set them in the right position possible without a variety of twists and loops arch.

Features braces for straight-wire technique are as follows:

1. Each bracket is designed for a specific group of teeth corresponding to each individual slot angle bracket allows you to set the teeth in the correct position;
2. The base of each bracket has an individual compensatory elevation;
3. Center worker bracket slot corresponds to the horizontal midpoint of the clinical crown of the tooth and vertically - to the longitudinal axis of the clinical crown of the tooth.

In the course of orthodontic treatment is desirable to achieve optimum results, the natural occlusion.

Andrews developed six keys of normal occlusion.

1. Relationship molars (Fig. 47): distal plane of the distal edge of the first permanent molars of the upper jaw in contact with the mesial plane of the mesial edge of the second molar of the lower jaw; mesiobuccal hill first upper permanent molar is in the longitudinal groove between the mesial and middle cusps of the lower first permanent molar.

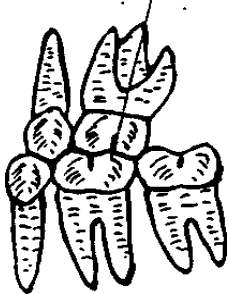


Fig. 47 Key 1

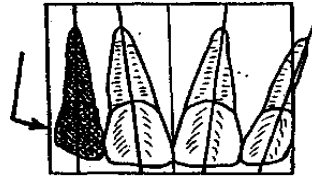


Fig.48. Key 2

2. Mesiodistal slope of crowns of teeth (Fig. 48), each tooth has a unique angle.

3. Vestibulooral slope of crowns of teeth - Torque (Fig. 49): the angle formed between the perpendicular to the occlusal plane and the tangent to the middle of the labial surface of the clinical tooth crown, it is also unique for each tooth.



Fig.49 Key 3

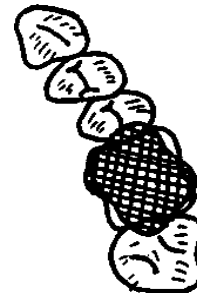


Fig.50 Key 4 4

4. Rotation (Fig. 50) Teeth in the tooth row must not be rotatable about its axis.

Intimate contact:

5. Teeth should stand in the dentition is tight, with no gaps.

6. Occlusal plane (Figure 51) occlusal plane must be aligned between the outermost cusp of the second molar of the lower jaw and the cutting edge of the lower central incisor should be a distance of 1.5 mm. According view of Tugarin, Persin, Porohin (1996) "the most optimal form of the curve of Spee for normal, functional occlusion - a direct occlusal plane. "

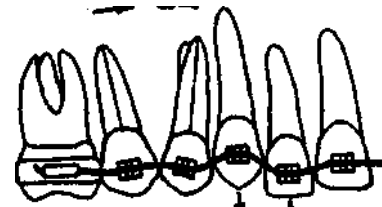
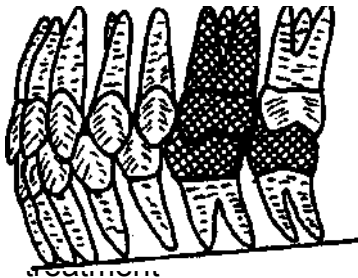


Fig.52. The first stage of

The correct choice of the type of orthodontic braces treatment of various stages of tooth-jaw anomalies is very important.

In the first phase of treatment is preferable multi rope arc or arcs from a nickel-titanium alloy small (0,36-0,41 mm) circular cross section (Fig. 52).

In a few months it is advisable to replace the arc quadrangular cross-section of 0.43 x 0.64 x 0.45 mm or 0.45 mm. At the final stage of treatment re good results gives the arc steel rectangular cross-section of 0.43 x 0.64 mm or 0.45 x 0.45 square mm.

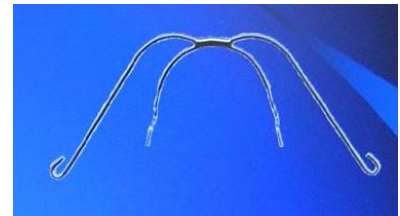


Fig. 53. The support tube, the head gear

In applying the straight-wire technology gaps in the dentition are closed by elastic chains, general ligature or garter spring, creating a place by means of opening the helical springs.

Fig. 54 shows the time of fixation of the arc to the bracket with a wire ligature. Basic kinds of support tubes clamp for molar teeth vestibular all arches are shown in Fig. 53

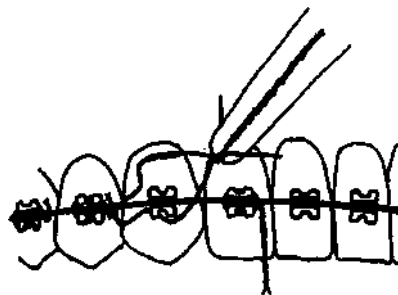


Fig.54. Fixing arc metal ligature to the bracket.

Intraoral devices are often combined with extraoral devices.

From the large variety of types of removable orthodontic appliances dwell on the positioner - a very effective unit and poorly described in the contemporary literature available, but was first used more than 50 years ago. The first attempts to use the positioner were taken after

treatment with arc machines as additional method for the liquidation of the remaining gaps between the teeth .

Positioner - is a removable orthodontic device of elastic material, the blend is usually both in the form of a series of dental aligners are connected to each other (Fig. 55).

The positioners are used several varieties.

1. Elasto-finisher: a model preforming (teeth on the model installed in the correct position and then preparing the positioner). Treatment sequence is as follows: 1) braces with arcs, 2) braces with a positioner, and 3) only the positioner.

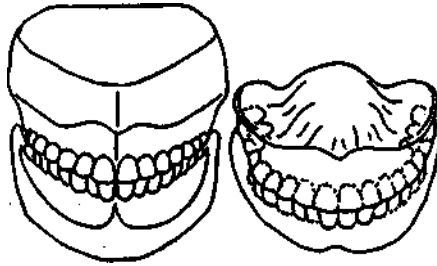


Fig. 55.
standard model

Positioner and the

2. Elasto-aligner: use only the positioner (without braces) manufactured by preformed models.

3. Elasto-Bond: stick to the teeth and prepares special buttons positioner (instead of using the conventional bracket bonding is permissible).

4. OSAMU-retainer: The unit, consisting of two materials (soft elastic material VIOPLAST and solid elastic material IMRRELON "S"). The design covers the horseshoe-shaped dental arch and a portion of the mucous membrane in the cervical area. Teeth to alveolar VIOPLAST coated, which in turn, together with the occlusal surface covered IMRRELON "S".

Questions for part 3:

1. Orthodontics- determination. Goals and objectives. Ukrainian and foreign scientists who have contributed to the development of orthodontics.
2. Major biological factors that provide growth and formation of dentoalveolar apparatus.
3. Physical-chemical, clinical and biological properties of the basic materials used for the manufacture of orthodontic appliances.
4. Determining the degree of manifestation of morphological and functional abnormalities in the dent alveolar apparatus and the difficulty of orthodontic treatment.
5. Orthodontic treatment planning with the patient's contact with the doctor (1-4 types of patients, depending on their behavior).
6. The causes of defects of teeth and dentition in children, their diagnosis and classification.
7. The clinic, diagnosis and treatment of defects of the tooth crown in children. Rational design of dentures.
8. Methods of prosthesis defects coronal temporary teeth, indication for their use.
9. Anatomical and functional changes in the masticatory apparatus of children in the formation of defects in teeth and dental arches and their implications.
10. Methods of orthopedic treatment in the absence of the crown part of the permanent teeth in children. Possible errors and their consequences.
11. Clinical and biological basis of children's dental prosthetics. Concept of scientists regarding the advisability of dental prosthesis in children.
12. Indications, contraindications to the replacement of defects of dentition in children dentures fixed structures.
13. Features of defects of dentition in children with removable prosthesis design.
14. The complete absence of teeth in children, its causes. The indication for the use of full dentures, especially their design, methods of fixation, all change.

15. The influence of dentures on the fabric prosthetic field and periodontal disease of the mucous membranes of the mouth caused by dentures, treatment.
16. Features prosthesis complicated defects of dentition in children.
17. Features a comprehensive orthopedic treatment of children with edentulous.
18. Trauma of teeth and jaws in children, classification, etiology, diagnosis, treatment strategy.
19. Traumatic injuries of teeth in children. Features of their clinics and diagnostics. Tactics of treatment. Terms of orthopedic surgery.
20. Clinical features of fractures of the upper jaw in children and their orthopedic treatment.
21. Prosthetic treatment of maxillary defects in children after partial resection due to malignancy.
22. The mechanism of displacement of fragments of lower jaw with one-sided mental fracture, methods of orthopedic treatment in children.
23. The mechanism of displacement of fragments of lower jaw with bilateral fractures at the site of the mandibular angle and features of their orthopedic treatment in children.
24. The mechanism of displacement of fragments of lower jaw with bilateral mental fracture, orthopedic care of their children.
25. Congenital maxillofacial plot, their causes, diagnosis, classification.
26. Morphological and functional changes in the dent alveolar apparatus with cleft upper lip, alveolar sprout, hard and soft palate.
27. Characteristics of different designs and obturators indication for their use in children with non-union of the upper lip, alveolar sprout, hard and soft palate.
28. Clinic - laboratory apparatus manufacturing steps Andresen-Goypl.. Design features, principle of operation, indication for use.
- 29.. Clinical and laboratory stages of manufacturing devices Frenkel 1-3 types, their design features, the operating principle, the indication for use.
30. Morphological and functional abnormalities in the dentoalveolar apparatus associated with the pathology of the endocrine system in humans.
31. Design features and operation of the bracket - systems.
32. Treatment options orthodontic patients with the type of behavior and the complexity of treatment.
33. Determining the degree of difficulty of treatment.
34. Prevention of complications in orthodontic treatment.
35. The causes of orthodontic relapse disease.

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