

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

Approved at the meeting of orthodontics  
«\_\_\_\_» \_\_\_\_\_ 20\_\_\_\_y.  
protocol № \_\_\_\_ by \_\_\_\_\_  
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**METHODICAL RECOMMENDATION**  
**for independent work of students during the preparation**  
**to practical lessons and on the lessons**

Academic discipline	Orthodontics
Module № 2	Anomalies and deformation of denta- jaw region
The theme of the lesson № 4	Sagittal anomalies of bite. Mesial bite. Etiology, pathogenesis, prophylaxis. Clinic and diagnostics of mesial bite.
Course	IV
Faculty	Preparation of foreign students

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**1. The relevance of the topic.** Early diagnosis of malocclusion and their timely treatment prevent persistent malocclusion. Progenic bite is one of the most severe malocclusion anomalies, which lead to significant morphological and aesthetic disturbances. Therefore, knowledge of the causes, the features of the clinic, the diagnosis and treatment of this anomaly are important in the training of a dentist.

**2. Specific objectives:**

To know the causes that contribute to the development of different forms of progenic bite.

To know the features of the progenic bite clinic.

To know the algorithm for examining patients with progenic bite.

To know the classification of progenic bite forms, their advantages and disadvantages.

To be able to diagnose different clinical forms of progenic bite.

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

Name of previous disciplines	Skills
1. Anatomy	to determine the deviation in the structure of the face
2. Radiology	on the basis of the cephalometric analysis to determine the form of malocclusion
3. Orthodontics	to be able to choose the rational design of the orthodontic device for the treatment of progenic bite

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

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

Terms	Definition
1. Progenia	Denotes the front position of the chin
2. Progenic bite	The teeth relation in the frontal region in which the lower incisors overlap the upper incisors with or without a sagittal space and with disturbances in the lateral teeth relation

4.2. Theoretical questions to the lesson:

1. Enumerate the main forms of mesial occlusion according to existing classifications.
2. What is progenia frequency and spread?
3. Name the main etiological agents and their role in mesial occlusion appearance.
4. Do pernicious habits influence mesial occlusion development?
5. How does the dysfunction of breathing and swallowing cause mesial occlusion?
6. What are the facial signs of mesial occlusion?
7. What are the intraoral signs of mesial occlusion?

8. Do intraoral and facial signs of mesial occlusion, complicated with other dentognathic anomalies, differ?

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

- Identification of risk factors for development of progenesis.
- Determining the pathogenesis of progenic occlusion development.
- Definition of risk groups development of progenic bite.
- Determination of the prognosis of progenic occlusion.

### **The content of the topic:**

Mesial occlusion belongs to sagittal plane anomalies and is rather widespread dentognathic pathology, observed in any period of occlusion formation.

The term “mesial occlusion” was introduced into orthodontic practice by Lisher in 1926. In literature there are such terms for this pathology: progenesis, forced occlusion, anterior type, inverse occlusion, articular progenesis.

The progenesis part among all dentognathic anomalies and deformations comprises from 1.9 to 18 %.

Parents apply to hospitals with their children concerning mesial occlusion already at young age more often than at other types of deformations. This happens because parents pay attention to the lower teeth covering the upper ones even when the pathology is not full-blown yet, and any other anomaly, for instance, posterior occlusion or deep overbite, is still imperceptible.

By Angle's classification (1889) mesial occlusion belongs to the 3rd class and is detected by lower jaw mesial dislocation. As a result 1st molars correlation violation is marked. The mesiobuccal tubercles of 6|6 teeth come upon the distal buccal tubercles of 6|6 teeth, and at more evident pathology the mesiobuccal tubercles of 6|6. teeth come into the space between 76|67 teeth. Thus, the 2nd premolar articulates with the intertubercular space of the 1st molar and at more evident mesial lower jaw dislocation even the 1st premolar of the upper jaw articulates with it.

Lower jaw displacement may be both uni- and bilateral. At unilateral displacement median line correlation violation is observed. Unilateral displacement is mostly a consequence of the premature extraction of the 2nd temporary molar on the lower jaw on one side. Distally located teeth and teeth standing in front of the defect transfer to the side of the extracted tooth.

By Katz' classification (1940) mesial occlusion belongs to the 3rd group of anomalies and arises because of excessive functioning of the muscles protruding the lower jaw, or insufficient function of retractors group.

Functional pathology of this deformation consists in the following: articulate movements prevail in the child – opening and closing of the mouth, and gliding, movements are absent, impossible because of the protruded lower jaw. This condition leads to rearrangement in the joint. Besides, a certain group of teeth does not participate in mastication – incisors are excluded from mastication. Their

function is taken by lateral teeth – premolars and molars, which consequently bear an increased load.

L.V. Ilyina-Markosian refers this pathology to sagittal occlusion anomalies, applying the term “anterior occlusion”, meaning lower jaw protrusion at usual location, and singles out its three varieties:

- without lower jaw displacement:
  - 1) general anterior occlusion;
  - 2) frontal anterior occlusion; o with lower jaw displacement;
- combined form.

D.A. Kalvelis (1957), taking into account etiological factors and hereditary character, refers progenia to sagittal occlusion anomalies, dividing it into true and false.

V.Y. Kurliandskyi (1957) and A.I. Betelman (1956) based their classification on the degree of jaw development. Thus, according to V.Y. Kurliandskyi, progenia is referred to dental arches correlation anomalies and arises because of:

- lower jaw overgrowth;
- upper jaw underdevelopment.

According to A. I. Betelman’s classification mesial occlusion belongs to sagittal plane anomalies and has such clinical forms:

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

A.M. Schwarz (1969) and F.Y. Khoroshilkina (1976) studying lateral teleroentgenograms of head detected dento-alveolar, gnathic, and combined forms of mesial occlusion.

A.S. Shcherbakov (1967) singles out dento-alveolar and skeletal forms.

S.I. Doroshenko (1968) on the grounds of interpretation data of lateral head teleroentgenograms of patients with anterior dental arches correlation came to a conclusion that it may be caused by the degree of jaws development, their form, location in the skull, lower jaw location in the TMJ, various correlations of bones in the skull. On the basis of these facts the author singles out the following forms of mesial occlusion:

- 1) progenia as a consequence of lower jaw overgrowth:
  - a) its body and branch;
  - b) body;
  - c) branch;
  - d) frontal part of the jaw;
- 2) progenia caused by upper jaw underdevelopment:
  - a) its body;
  - b) frontal part of the jaw;
- 3) progenia caused by the anterior location of the lower jaw:
  - a) in the skull;
  - b) in the joint.

In the WHO classification mesial occlusion is presented in the following chapters:

- jaw size anomalies:
  - upper jaw micrognathia;
  - lower jaw macrognathia;
- anomalies of jaws location relative to the skull base:
  - a) lower jaw prognathism;
  - b) upper jaw retrognathia;
- dental arches correlation anomalies:
  - a) mesial occlusion.

Mastication apparatus development is tightly connected with the development of the whole organism. It begins from the fifth week of embryonal development (when the first teeth germs anlage takes place) and continues during many years after the child is born until complete formation of permanent occlusion in mature age (18–20 years). If after child's birth the lower jaw alveolar process protrudes relative to the one of the upper jaw, this testifies to possible formation of mesial occlusion at temporary teeth eruption.

From the point of view of etiopathogenesis, all this period of time is expedient to be divided into three stages:

- 1) intrauterine, antenatal. During this time the fetus is under mother's organism protection, and its development disturbance considerably depends on the mother's state, and less – on environmental factors;
- 2) labor stage;
- 3) postnatal, when the child is under the influence of environmental factors, adapts to them at the expense of congenital and inherited properties.

In the intrauterine period the fetus is under "mother's protectorate", in a peculiar "microenvironment", but it can create a number of different conditions, negatively influencing the development of the embryo as a whole, and in particular – facial part development. This influence may be conditioned by different factors:

- physical (fetus mechanical injury, radiation damage, thermal agents, vibration, etc.);
- chemical (intake of different pharmacological, and especially hormonal preparations, Alcoholic beverages, smoking during pregnancy);
- biological (infectious diseases, genetic or hereditary diseases);
- social (conditions and way of life and work of the pregnant woman, diet in this period).

These agents, influencing the organism, leave a certain trace, the so-called "phylogenetic background", which later declares itself in ontogenesis as congenital dento-gnathic anomalies.

Enumerated factors influence leads to specific and nonspecific diseases of the mother and father, which can be communicated from generation to generation by a dominant or a recessive character as a genetic disease of the whole organism or only of the dento-gnathic apparatus. Also progenia and upper jaw underdevelopment may be caused by the form, size and function of the tongue in

the period of oral cavity embryonal development. The tongue, mainly pressing on the anterior part of the lower jaw, causes progenia, and its belated deepening onto the bottom of the oral cavity causes narrowing of the inter-maxillary bone and upper jaw alveolar processes.

Besides, mesial occlusion may be caused by water-salt and vitamin metabolism disorders, early pregnancy toxemia. It has been established that pregnancy and labor pathologies frequency and progenia frequency are in direct proportion.

Labor stage: progenia is more often (33 %) observed in children, who were bom at transverse lie, breech presentation or footling presentation, after prolonged labor with a long anhydrous period, augmentation of labor, or operative delivery.

Postnatal period: the most critical for a child are the first months, later on – two first years of life. In the first period the child is under the influence of the environment, and it is the time when permanent occlusion foundation is laid.

Mesial occlusion may be caused by congenital peculiarities of the facial skeleton bone structure, especially of the lower jaw, inter-maxillary bone underdevelopment, calcium metabolism disorder because of rachitis or other diseases, partial or multiple adentia in the region of the upper jaw, multiple retention of the upper teeth or their premature loss, supplemental teeth on the lower jaw, late transitional dentition.

The shortened or irregularly attached tongue frenulum exerts constant pressure on the frontal part of the lower jaw, which leads to progenia. This is also promoted by macroglossia.

Palatopharyngeal tonsil hypertrophy leads to the reduction of the opening for air flow passage. Pressure is observed in the region of the epiglottis because of lingual tonsil enlargement, and the child, to ease breathing, instinctively protrudes the lower jaw, abducting the root of tongue together with the enlarged tonsil. Such mouth breathing causes mesial occlusion also because the habit of protrading the lower jaw appears.

Irregular swallowing (infantile type), irregular tongue location in the oral cavity during speaking and in quiescence, uneven wearing down of temporary teeth tubercles at the beginning of transitional dentition occlusion, especially of the lower canine teeth, uneven transitional dentition on both jaws – all these are etiological agents of progenia.

Individual lower incisors torsion leads to dental arches closure disorder, causes lower jaw protrusion. Upper jaw underdevelopment in the frontal part because of chronic inflammatory processes, new formations, surgical interventions on the jaws, endocrine disturbances, hypophysis hyperfunctioning leads to anterior occlusion formation.

Pernicious habits are very important: sucking of the upper lip, tongue, fingers, and different objects, sleeping on a high pillow, putting a palm or a fist under the chin in sitting position.

There are differentiated physiological and pathological types of progenia.

Physiological progenia is characterised by multiple contacts between the dental arches both in the front and lateral parts. It is viewed as an anatomic variant, which does not require any orthodontic treatment.

At pathologic progenia contacts between teeth are violated. There occur morphological, functional, and esthetic changes of the dentognathic apparatus, which require orthodontist's intervention.

Most authors differentiate two main progenia forms: true and false.

L.V. Ilyina-Markosian divides false progenia into two forms:

- anterior false progenia;
- forced occlusion.

Their etiology, pathogenesis, functional and morphological disturbances, and treatment differ. Some authors (L.V. Ilyina-Markosian, D.A. Kalvelis) view false progenia as inverse overbite of individual upper frontal teeth at preserved correct correlation of both dental arches along the full length. A.I. Betelman, Y.M. Aleksandrova, A.D. Mukhina refused from this term and classify false progenia as upper frontal teeth palatine position.

Forced occlusion is a kind of false progenia and develops as a result of the habit of protruding the lower jaw. This form of false progenia is also called articular.

Mesial occlusion has characteristic facial and intraoral features. The main facial feature is lower jaw protrusion. At external examination, in cases of lower jaw enlargement the disturbed harmony of face profile attracts attention: the chin and upper lip protrude considerably, at that the upper lip somewhat falls back relative to the lower one, the subnasal fold is deep, the lower lip red border is wide. At deep overbite the lower part of face is not infrequently shortened, as a result of which the lower lip is thickened. At increased lower jaw angles and open bite the lower part of face is elongated, the lips close tensely, the oral fissure not infrequently gapes. If mesial occlusion combines with forward lower jaw shift, facial signs of disturbances are fullblown.

Oral cavity examination shows that the lower jaw is located in front of the upper one, its dental arch is wider.

The closure of the 1st permanent molars and canine teeth by 3rd Angle's type may be by 1/2 size of the 1st permanent molar tubercle, by one tubercle, by 1/2 of the 1st permanent molar crown and more.

Frontal teeth correlation may vary: in some cases the labial surface of the upper incisors touches the lower incisors lingual surfaces, in other cases there is an inverse sagittal gap between the frontal teeth by 3 mm and more. Inverse overbite depth may be minimal, moderate, or deep.

Mesial occlusion is more often complicated with upper jaw narrowing, which causes lower lateral teeth prevailing over the upper ones. The upper jaw may be flattened in the frontal part. Uni- or bilateral crossed relation is observed in the lateral parts.

The upper frontal teeth as a result of microgenia are located with torsions, transfer vestibularly, there is often observed frontal teeth congestion orally. The

lower incisors sometimes deviate vestibularly, as a result of which diastems and diaereses form between them, or they press the upper incisors, increasing their palatine inclination.

At a most evident anomaly the lower jaw as though absorbs the upper one. The contact in the region of lateral and frontal teeth is violated, only the gliding of the lower teeth lingual surface on the upper teeth buccal surfaces takes place.

Functional disorders are also very important at mesial occlusion. Face form is violated. At the absence of occlusive contact between incisors food biting becomes impossible. Because of the forward shift of the whole lower jaw dental arch and molars correlation violation the general mastication area decreases. Tubercular closure, which forms between the masticatory teeth, hampers food grinding.

Sometimes, because of lower jaw protrusion, functional disorders, conditioned by its articular heads location in the glenoid fossae, there appears pain in the joints, crunch, clicking.

The speech of patients with mesial occlusion is violated, lisping appears.

Dense location of the lower frontal teeth combines with dental tartar deposit, precervical caries, gingivitis.

For the differential diagnostics of dento-gnathic and gnathic forms of mesial occlusion the clinical functional test is used: the patient's face form is evaluated in profile at usual occlusion (the symptom of "capricious face") and if the patient can shift the lower jaw backwards to the maximum till the marginal incisors closure, and at that 1st permanent molars correlation becomes characteristic of the neutral occlusion, the dento-alveolar form of mesial occlusion with lower jaw protrusion is diagnosed. In another case mesial occlusion is caused by the difference in the dento-gnathic arches and/or jaws sizes. If jaw dislocation is present, face expression improves after the jaw is set in correct position.

### **Materials for self-control:**

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

- to sketch in the album the drawings with extra-oral and intraoral signs of progenic bite.

B. Tasks for self-control:

1. Bite description in the sagittal plane is:

sagittal space, the canines and first permanent molars relation (second temporary molars)

the depth of incisor covering, the size of the vertical space

coincidence of upper and lower lip frenulum, the coincidence of the median line

lateral teeth correlation

there is no correct answer

2. Mandible retrogeny is physiological in the next period of occlusion:

in new-born period



stable temporary bite  
involution  
early period of the mixed bite  
there is no correct answer

3. What bad habits don't affect progenic bite formation:  
putting fist under cheek during sleep  
thumb sucking  
upper lip biting  
mouth breathing  
there is no correct answer

4. Angle classification is based on this criterion:  
the correlation of the upper and lower first permanent molars  
the correlation of the upper and lower frontal teeth  
the correlation of the upper and lower canines  
the correlation of the upper and lower second temporary molars  
there is no correct answer

5. According to the Angle' classification progenic bite can be such classes:  
I and III  
III  
I and II2  
II and III  
there is no correct answer

6. Progenic bite in Betelman' classification termed as:  
mesial bite  
distal bite  
transversal bite  
sagittal bite  
there is no correct answer

7. Progenic bite in Kalvelis' classification termed as:  
progenia  
prognathia  
bipognathia  
opistognathia  
there is no correct answer

8. According to Grigorieva' classification there are such forms of progenic bite:  
neutral and mesial  
neutral and distal  
neutral and sagittal

neutral and vertical  
there is no correct answer

9. The term "progenic" corresponds to a symptom:  
the reversed correlation of the frontal teeth  
deep incisal covering  
the correlation of the canines  
the correlation of the first permanent molars  
there is no correct answer

10. The term "mesial" corresponds to a symptom:  
the correlation of the first permanent molars  
the presence of sagittal space  
the inclination of the lower anterior teeth  
the inclination of the upper frontal teeth  
there is no correct answer

11. Facial features of the progenic mesial bite:  
all answers are correct  
deep nose-labial folds  
upper lip falls back relative to the lower one  
straight or protruding chin  
increased mandible angle

12. For the differential diagnostic of dentoalveolar and gnathic forms of progenic bite is used:  
lateral cephalometry  
direct cephalometry  
occlusal radiography  
contact intraoral radiography  
there is no correct answer

13. Difference between progenic mesial and neutral bites is:  
the correlation of the first permanent molars  
sagittal space size  
the depth of incisor covering  
the absence of a sagittal space  
there is no correct answer

14. The main feature of III class by Engle is:  
the correlation of the incisors and first permanent molars  
character of the incisal covering  
the presence of a sagittal space  
the correlation of the first permanent molars

there is no correct answer

15. According to the Angle' classification progenic neutral bite is referred to:

class I

class II-1

class II-2

class III

there is no correct answer

16. According to the Angle' classification progenic mesial bite is referred to:

class III

class II-1

class II-2

class I

there is no correct answer

17. Progenic neutral bite has following intraoral characteristics:

all answers are correct

the presence of a sagittal space

retrusion of the upper frontal teeth

correct correlation of the canines

neutral correlation of the first permanent molars or second temporary molars

18. Progenic mesial bite has following intraoral characteristics:

all answers are correct

the presence of a sagittal space

retrusion of the upper frontal teeth

mesial correlation of the canines

mesial correlation of the first permanent molars or second temporary molars

19. The lower incisors cover the upper 1/2 of the crown height. The upper canine is projected on the first lower milky molar. Spaces between the lower frontal teeth. Identify possible etiological factor of this disease:

parafunction of the tongue

biting the lower lip

cheeks sucking

adenoidectomy

sleeping on one side

20. Occlusion of temporary teeth. The upper canine is projected on the first lower milky molar. Spaces between the lower frontal teeth. The lower incisors cover the upper 1/2 of the height of the crown. Pathogenesis of this case may be due to:

shortening of the upper dentition

shortening of the lower dentition

narrowing of the lower dentition  
distal displacement of the mandible  
elongation of the upper dentition

21. Macrognathia of the lower jaw may be due to:  
the mandibular complex growth disorder  
a violation of teeth number  
a violation of naso-maxillary complex growth  
a base of the skull synchondroses impaired growth  
teething violation

22. To the orthodontist asked parents with a child of 8 years with aesthetic disorders. The father has a similar malocclusion. The face is elongated by increasing the lower part, flattened upper lip, chin straight with smooth mental fold. Reverse incisor overlap by  $\frac{1}{2}$  the upper incisor. Canines and first permanent molars mesial relation. Causes of malocclusion in a given clinical situation can be:  
heredity  
cheeks sucking  
a nail-biting  
artificial feeding  
biting the lower lip

23. To the orthodontist asked parents with a child of 8 years with complaints of aesthetic disorders. The face is elongated by increasing the lower part, flattened upper lip, chin straight with smooth mental fold. Reverse incisor overlap by  $\frac{1}{2}$  the upper incisor. Canines and first permanent molars are in mesial relation. The lower third of the face increasing may be due to:  
vertical growth of the mandible  
horizontal growth of the mandible  
neutral growth of the mandible  
axial growth of the mandible  
orthopedic growth of the mandible

24. Deviations in the growth of the facial skull in the formation mesial bite begin to appear:  
in aging period of temporary occlusion  
in formation period of temporary dentition  
in the late period of the mixed occlusion  
in the early period of the mixed occlusion  
in the early permanent dentition period

25. The child of 9 years during prophylactic examination determined the following: flattened upper and protruding lower lip, chin protrudes forward. The lower incisors cover the upper  $\frac{1}{3}$ , sagittal space is 2 mm, missing upper lateral

incisors, the first permanent molars ratio - I class by Angle. Missing the lower temporary molars. Identify possible etiological factor of prognathic relation in this clinical situation:

- adentia of lateral incisors
- protrusion of the lower incisors
- early loss of lower teeth
- mouth breathing
- biting of the cheeks

26. The child of 9 years during prophylactic examination determined the following: flattened upper and protruding lower lip, chin protrudes forward. The lower incisors cover the upper 1/3, sagittal space is 2 mm, missing upper lateral incisors, the first permanent molars ratio - I class by Angle. Missing the lower temporary molars. Pathogenesis of prognathic relation in result of the lateral incisors adentia due to:

- shortening of the upper jaw frontal segment
- elongation of the upper jaw frontal segment
- vertical dento-alveolar frontal segment shortening
- vertical dento-alveolar frontal segment elongation
- expansion of the upper jaw lateral segment

27. The child 5 years old has the long narrow face with protruding chin, reverse incisor overlap, the depth of 1/2 the height of the crowns. The upper canines are projected between temporary molars. Sagittal gap is 2 mm, no signs of milk teeth cusps abrasion. Identify possible etiological factor in the formation of prognathic occlusion in this clinical situation.

- absence of the milk teeth cusps abrasion
- biting the cheeks
- microglossia
- lordosis
- thumb sucking

28. The pathogenesis of prognathic jaws relation at the absence of milk canines abrasion due to:

- the sagittal upper jaw growth delaying
- development of mouth breathing
- incorrect tongue articulation
- changes in the chemical composition of saliva
- increasing of the oral cavity volume

29. In a patient 12 years old is determined: the lower incisors are located anteriorly to the upper, with the presence of gaps. At the closing of the teeth in habitual occlusion is determined by the pressure of the tip of the tongue on the frontal teeth

of the lower jaw. The ratio first permanent molars - III class Angle. Life anamnesis - adenoidectomy in 8 years. Causes of malocclusion could be:

- mouth breathing
- sucking cheeks
- a nail-biting
- artificial feeding
- biting the lower lip

30. In a patient 12 years old is determined: the lower incisors are located anteriorly to the upper, with the presence of gaps. At the closing of the teeth in habitual occlusion is determined by the pressure of the tip of the tongue on the frontal teeth of the lower jaw. The ratio first permanent molars - III class Angle. Life anamnesis - adenoidectomy in 8 years. The pathogenesis of anterior mandible location may be due to:

- anterior displacement of the mandible during mouth breathing
- lack of tone cheek muscles
- the defect of dentition of the lower jaw
- microglossia
- nature of the food taken

31. Micrognathia of the lower jaw may be due to:

- violation of mandibular complex growth
- violation of cranial synchondrosis growth
- violation of naso-maxillary complex growth
- delay growth of skull base synchondroses
- teething violation

32. A zone of growth of the mandible is:

- the articular process of the mandible
- symphysis
- mental hole
- the mandibular canal
- coronoid process of the ramus

33. During the patient 8 years old examination revealed: the state after lip and palate cleft plastic surgery. Midface flattening. The lower lip covers the upper. Diagnosis is progeny. The progenic jaws relation in this patient may be due to:

- congenital upper jaw malformation
- patients' life condition
- feeding features
- excessive exercise
- accelerated teething

34. During the patient 8 years old examination revealed: the state after lip and palate cleft plastic surgery. Midface flattening. The lower lip covers the upper. Diagnosis is progeny. The pathogenesis of progenic jaws relation is caused by:  
delaying of the upper jaw growth in the sagittal direction after plastic surgery  
development of mouth breathing  
incorrect tongue articulation  
changes in the chemical composition of saliva  
oral cavity volume increasing

35. During preventive examination of child 4 years old with progenic bite. Determined: reverse incisal overlap  $\frac{1}{2}$  of the height of the crown, the inclination of the lower incisors vestibular. The canines relation is neutral. Child sucks 4 fingers of the right hand during the sleep. Causes of malocclusion in this clinical situation can be:  
thumb sucking  
the habit of nail biting  
heredity  
artificial feeding  
biting the lower lip

36. During preventive examination of child 4 years old with progenic bite. Determined: reverse incisal overlap  $\frac{1}{2}$  of the height of the crown, the inclination of the lower incisors vestibular. The canines relation is neutral. Child sucks 4 fingers of the right hand during the sleep. The pathogenesis of lower incisors protrusion may be due to:  
fingers pressure during sucking  
the pressure of the lower lip  
the pressure of the cheeks  
the pressure of the tongue  
the pressure from the lateral teeth

37. To the orthodontist asked parents with a child 6 years of age. The lower incisors cover the upper  $\frac{1}{2}$  of the height of the crown. The upper canine is projected on the first lower molar, anterior buccal tubercle of the upper second temporary molar is in contact with the distal buccal cusp of lower. Define the diagnosis according to the Kalvelis classification:  
true progeny  
progenic mesial bite  
progenic neutral bite  
progenic open bite  
orthognatic bite

38. Patient has the reverse incisal overlap by 1/2 the upper incisor. Sagittal space is 2mm. The first permanent molars ratio by 3 class Angle. The mandible angle size -131°. Define the diagnosis according to the A. D. Kalvelis classification:

- true progeny
- prognathia
- distal occlusion
- progeny
- progenic bite

39. Patient has the reverse incisal overlap by 1/2 the upper incisor. Sagittal space is 2mm. The first permanent molars ratio by 3 class Angle. The mandible angle size -131°. Define the anomalies degree according to the Bogatsky classification:

- 1 degree
- 2nd degree
- 3rd degree
- 4 rd degree
- 5th degree

40. Sagittal space between the alveolar arches in newborn is 2mm. Which prognosis for occlusion development is possible:

- mesial
- physiological
- distal
- straight
- open

41. Newborn sagittal area between the alveolar arches is 2mm. How big should be the sagittal area between the alveolar arches in the newborn:

- 5-7mm
- 2-3mm
- 3-4mm
- 4-5mm
- 1-2mm

42. The child of 9 years during prophylactic examination determined the following: the face is oval, elongated with flattened upper and protruding lower lip, chin protrudes forward. The lower incisors cover the upper 1/3, sagittal space - 2 mm, missing upper lateral incisors, the ratio first permanent molars in class I Angle. Define the diagnosis according to the L.P. Grigorieva classification:

- progenic neutral bite
- mesial bite
- neutral occlusion
- progeny false
- progeny true



43. In a child 6 years old the lower incisors cover the upper 1/2 of the height of the crown. The upper canine is projected on the first lower molar, anterior buccal cusp of the upper second temporary molar is in contact with the distal buccal cusp of lower. Determined tremas and diastema in the frontal lower segment. Identify possible etiological factor of this disease:

tongue parafunction

lower lip biting

sucking cheeks

adenoidectomy

sleeping on one side

44. In a child 6 years old the lower incisors cover the upper 1/2 of the height of the crown. The upper canine is projected on the first lower molar, anterior buccal cusp of the upper second temporary molar is in contact with the distal buccal cusp of lower. Determined tremas and diastema in the frontal lower segment. Pathogenesis of progenic jaws relation may be due to:

shortening of the upper dentition

shortening of the lower dentition

narrowing lower dentition

distal displacement of the mandible

elongation of the upper dentition

45. Diagnosis for 4 years old child – progenic bite. Objectively: determined by reverse incisal overlap 1/2 of the height of the crown, the lower incisors frontal inclination, upper incisors in retruded position. The canines is neutral. According to educators during sleep sucks 4 fingers of the right hand. Make a diagnosis according to the Kalvelis' classification:

false progeny

mesial bite

neutral occlusion

progenic neutral occlusion

true progeny

### **Literature**

Main:

1. Flis P.S. "Orthodontics". – Kyiv, MEDICINE, 2008, – 285-291p.

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1. Pubmed. – Режим доступу: <http://www.ncbi.nlm.nih.gov/pubmed/>

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