

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

Approved at the meeting of orthodontics
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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 № 5	Integrated treatment and prophylaxis of mesial bite and its prognosis.
Course	IV
Faculty	Preparation of foreign students

Poltava 2017

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, 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 various forms of progenic bite.

To know the peculiarities of treatment of various forms of progenic bite in a temporary, mixed and permanent bite.

To know orthodontic appliances that used in the treatment of various forms of progenic bite.

To know the definition of the degree of difficulty in eliminating morphological and functional disorders in the treatment of progenic forms of bite.

To know the peculiarities of the retention period in the treatment of various forms of progenic occlusion.

To be able to make a prognosis of treatment of different clinical forms of progenic bite.

To be able to make a plan for treatment various forms of progenic bite.

To be able to choose the rational design of the orthodontic appliances for the treatment of different progenic bite forms.

To be able to choose the rational design of the retention appliances.

To diagnose different clinical forms of prognosis.

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. What dento-gnathic anomalies accompany mesial occlusion?
2. The meaning of teleroentgenography investigations in mesial occlusion diagnostics.
3. Mesial occlusion treatment peculiarities in infancy.
4. Mesial occlusion treatment peculiarities in the period of transitional dentition.
5. Mesial occlusion treatment peculiarities in the period of permanent occlusion.
6. Indications to surgical procedures in the complex treatment of mesial occlusion.
7. Indications to the application of Schwarz' and Bynin's gum shields.
8. Construction peculiarities of Frankel's functional regulator of the 3rd type and indications to its application.
9. What is the essence of the functional method of treatment, offered by Frankel?

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

- Identification of risk factors for development of progenia.
- 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 treatment largely depends on etiological agents and the possibility of their elimination, and also on the degree of morphological and functional disorders manifestation, the complicity of their elimination in different age periods.

In the period of temporary occlusion much attention is paid to the normalization of alveolar processes and jaws growth during frontal teeth coming out. If upper jaw underdevelopment and lower jaw overgrowth are observed in an infant, it is necessary to massage the alveolar process of the upper jaw in the anterior part for growth stimulation.

At the shortened tongue frenulum a surgical intervention (frenulum plastic surgery) must be carried out. If the child is fed artificially, attention is to be paid to feeding correctness.

One must watch upper incisors eruption and their position in occlusion with the lower ones. In the period of temporary occlusion the measures of fighting against the pathology come to pernicious habits elimination and normalization of the breathing, swallowing, speech, and mastication functions. To break the child of the habit to breath orally, suck fingers, tongue, different objects, to normalize nasal breathing standard vestibular Hinz' and Schonher's plates may be used.



Hinz' plates

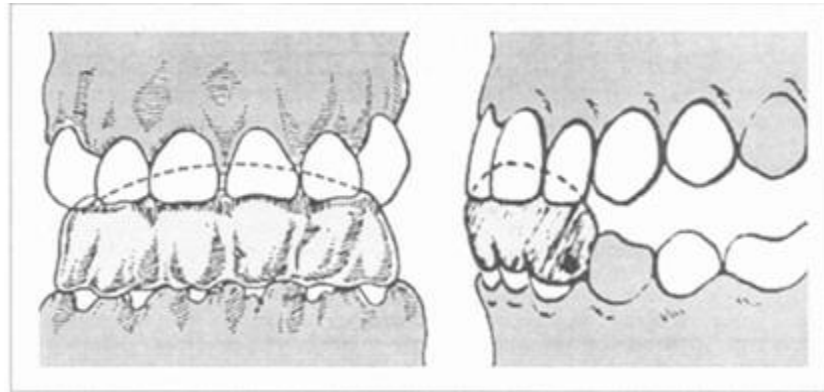
To limit the following lower jaw growth and promote upper jaw physiological development removable or fixed gum shields, disjoining occlusion, may be offered. The upper jaw, brought out from the block at occlusion disconnection, has a possibility of normal development. To inhibit lower jaw growth in the sagittal direction a chin sling is used, fixed with rubber recoil to a head cap.

In the temporary occlusion period there often takes place lower jaw forced protrusive position, connected with the lower canine teeth, which bear against the opposing teeth with their cutting edges and fix the lower jaw in the forced position. Selective regrinding of the canine teeth tubercles, and sometimes of the incisors sculpri, creates conditions for free lower jaw movements in the sagittal plane and normal upper jaw growth.

Remedial gymnastics is used to train the orbicular muscle of mouth and to attain lips closure and nasal breathing. With this purpose lip activators, and also H. Dass' activator-apparatus (1961) are used.

In the initial period of transitional dentition, at the age of 5.5 years, mesial occlusion is treated with the same appliances as in the temporary occlusion period.

The best time for treatment is the time before the coming out of the 1st permanent molars and canine teeth. The presence of permanent incisors with deep overbite/ allows using devices with inclined planes – Schwarz' gum shields, Katz' directing crowns. If overbite is insignificant, inclined planes are not indicated, because lateral teeth disconnection will promote the growth of their alveolar processes, which might lead to open bite development. In such cases, i.e. at insignificant overbite, it is expedient to use a removable plate with lateral teeth mastication surfaces covering, and at that permanent molars are to be covered. If there are diastemas in the region of lower frontal teeth, such plate must have an elastic wire arch, located from the labial side of the teeth.



Schwarz' gum shield

At deep or average reverse overbite and insignificant reverse sagittal gap B.N. Bynin's gum shield may be used.



Bynin's gum shield

At evident upper jaw underdevelopment with insignificant overbite it is indicated to use an orthodontic appliance on the upper jaw with lateral teeth mastication surfaces covering, with elastic activators for the frontal group of teeth protrusion.

At 6–9 years it is recommended to use Frankel's functionally acting device of the 3rd type, Balters' bionator of the 3rd type, Bimmler's elastic occlusion former of the C type.

Andresen-Haupl's activator for the treatment of mesial occlusion is effective at insignificant overbite (to 1.5 mm) or at the combination of mesial occlusion with open bite, which combines with the pernicious habit of tongue sucking or putting it between the dental arches in the region of the defect. The device consists of two basal plates for the lower and upper jaws, joined with plastic in inter-occlusal space.



Frankel's functionally acting device of the 3rd type



Andresen-Haupl's activator

When detecting the constructive occlusion the frontal teeth are set in marginal closure, if it is possible, or their cutting edges are set at one horizontal level. The vestibular arch is located in the region of the lower frontal teeth. If there are diaereses between them, it is activated in the process of treatment, and the plastic, adjacent to the lingual surface of these teeth, is sawn down. To enhance upper incisors protrusion a screw is added to the plate, the saw cut is performed sector-wise.

In the period of second dentition, if there are diaereses in the region of frontal teeth, it is recommended to use gum shields to disconnect occlusion; hooks are welded into gum shields on the vestibular surface, the hooks are opened distally, and rubber recoil is put onto them.

Mesial occlusion treatment in the permanent occlusion period is long-term, requires complex treatment, not infrequently combining with surgical methods. Upper micrognathia treatment is aimed at upper jaw enlargement. This is achieved with the help of orthodontic appliances with activators and dilating devices (screws, wire dilators), which promote upper frontal teeth protrusion, and lateral jaw parts dilation. Besides, this form of mesial occlusion also has clinical varieties, which depend on the degree of upper jaw underdevelopment, individual teeth

quantity and position, overbite depth. The choice of treatment method and orthodontic appliances construction must be individual.

At the big lower and normal upper jaws the treatment must consist in lower jaw downsizing, which can be achieved by means of frontal teeth shifting backwards at the expense of spaces between them. If there are no enough spaces, the treatment is conducted with teeth extraction (more often – premolars), after what the frontal group of teeth is transferred with the help of removable orthodontic appliances. When a canine tooth is transferred distally the 6th and 7th teeth are usually taken as support, if it is possible, for the place of the extracted tooth not to be replaced by the lateral teeth, displaced forward. Fixed appliances are used – A.I. Pozdniakova's, Angle's with intermaxillary recoils.

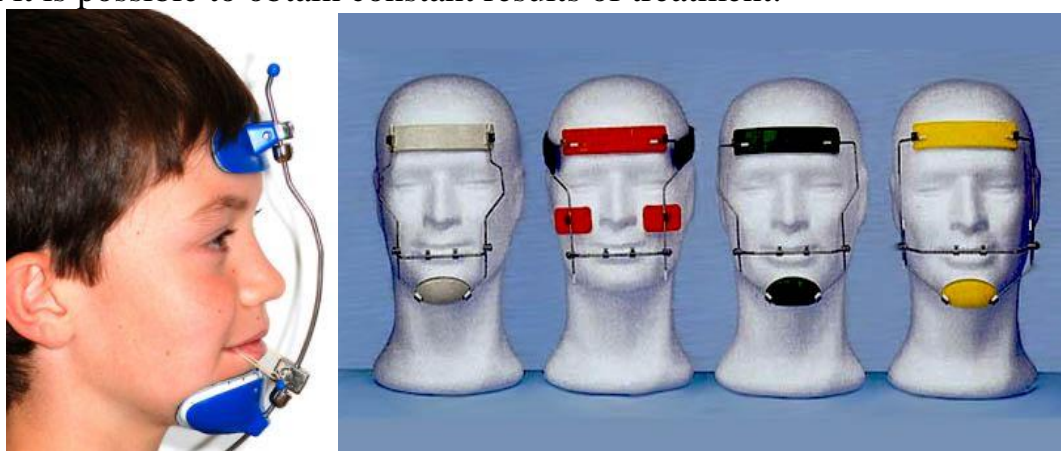
In case of teeth extraction it is better to use bracket system for the treatment. If the lower jaw is considerably big, orthodontic treatment alone will not produce the desired effect. The treatment is to be combined (surgical-orthodontic), for which purpose the alveolar process or the lower jaw body is cut partially, with subsequent bone fragments set in the position eliminating the deformation. At that, orthodontic preparation precedes the surgical procedure, and the orthodontist finishes the treatment.

The most widespread is the clinical case, when mesial occlusion arises as a result of upper jaw underdevelopment and lower jaw overgrowth. Treatment measures in this case are directed at upper jaw enlargement and lower jaw downsizing.

Orthodontic treatment of mesial occlusion may be combined with compact osteotomy on the upper jaw alveolar process. This intervention allows more corpus transfer of the upper frontal teeth in the vestibular direction and in such a way the change of the alveolar process profile form.

To improve orthodontic treatment results physiotherapeutic methods are used (vacuum therapy, vibration influence, MRT).

In the permanent period of occlusion preference should be given to fixed mechanically acting appliances in complex with facial masks, with the help of which it is possible to obtain constant results of treatment.



Face masks

Materials for self-control:

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

To sketch in the album the appliances for mesial bite treatment.

B. Tasks for self-control:

1. For the progeny treatment the following type of Frenkel' regulator is used:

III

II

I

IV

there is no correct answer

2. For the progenic bite treatment in temporary dentition next orthodontic appliances are used :

Brukl' appliance

Gulyayeva' appliance

Muelleman' propulsor

Frenkel' regulator type II

there is no correct answer

3. What orthodontic appliances do not apply in progenic bite treatment?

Persin' appliance

Andresen-Haupl' activator

Brukl' appliance

Bynin' gum shield

there is no correct answer

4. For the training of cicumoral muscle the following preventive appliances are used:

Dass' activator

Lips equilibrator

Brukl' appliance

vestibular shield

all answers are correct

5. What factors can assist to gnathic form of progenic bite formation:

mesial position of the mandible with TMJ according to the upper jaw and the base plane of the skull

change the upper incisors inclination according to the base plane of the upper jaw

change the lower incisors inclination according to the base plane of the lower jaw

change in interincisor angle size

there is no correct answer

6. Changes in the size of the upper jaw of patients with progenic bite:

decreasing of the sagittal sizes

increasing of sagittal sizes

increasing of transversal sizes

decreasing of the transversal sizes
there is no correct answer

7. Changes in the size of the lower jaw of patients with progenic bite:
increasing of sagittal sizes
decreasing of the sagittal sizes
increasing of transversal sizes
decreasing of the transversal sizes
there is no correct answer

8. In the III type of Frenkel's regulator labial pellets are located in such way:
in the area of the upper lip
in the area of the lower lip
in both lips
absent
there is no correct answer

9. The design of III type of Frenkel's regulator includes such an arches:
vestibular mandibular and oral maxillary
vestibular maxillary
oral maxillary
oral mandibular
there is no correct answer

10. In the III type of Frenkel's regulator buccal shields are located in such way:
distance from the alveolar process of the upper jaw to 2,5 mm
adjacent to the alveolar processes of both jaws
distance from the alveolar processes of both jaws to 2,5 mm
adjacent to the alveolar process of mandible
there is no correct answer

11. The design of Brukl's appliance includes the following elements:
plastic frontal inclined bite plane
metal inclined bite plane
plastic lateral inclined bite plane
metal frontal bite plane
there is no correct answer

12. According to the principle of action Brukl's appliance without vestibular arch activating is:
functionally directing
functionally acting
mechanical action
combined action
there is no correct answer

13. According to the mode and place of action Brukl's appliance is:
one-jaw of inter-maxillary action
one-jaw
two-jaw
extra-oral
there is no correct answer

14. According to the type of construction Brukl's appliance is:
plate
shield
block
skeleton
there is no correct answer

15. For progenic bite treatment can be used:
the Bynin' kappa
Propulsor by Muleman
Pozdnyakova appliance
Kraus' vestibular-oral shield
Kerbits' vestibular shield

16. Treatment of gnathic forms of malocclusion involves the method:
surgical and instrumental
prosthetic
instrumental
biological
biological and prosthetic

17. The displacement of the mandible distally is possible:
to 2 mm
to 4 mm
to 3 mm
to 5 mm
on 6 mm

18. To change the lower incisors inclination orally use:
vestibular arc
frontal inclined bite plane
lingual arc
lateral inclined bite plane
shield

19. The distal mandible displacement is achieved by using the appliance with:
frontal inclined bite plane

lateral inclined bite plane
lingual arc
buccal shield
vestibular arch

20. Contraindications to the appointment of the apparatus Bruks is:

the sagittal space more than 2-3 mm
gnathic form of malocclusion
crowding of the upper front teeth
a small reverse incisor overlapping
decreased tonus of the circumoral muscles

21. To delay the growth of the lower jaw use:

the chin cap
the myofunctional trainer
Kraus' shield
Wunderer' appliance
bracket-technique

22. In the treatment of mesial occlusion with the lower premolars and molars extraction use the appliance:

bracket-technique
Schwartz
Katz
Brukl
Bunin

23. 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 overlapping by 1/2 the upper incisor. Canines and first permanent molars mesial relation. Choose the design of the orthodontic appliance, which could apply in this case:

plate with lateral flat bite planes and three-dimensional screw
Bynin kappa
Frenkel Regulator type III
Katz plate
Brukl appliance

24. 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 are neutral. Child has upper lip sucking habit. By which appliance is possible to save the child from bad habits:

Kerbits' shield

Bynin kappa
Katz plate
Brukl appliance
plate with lateral flat bite planes and three-dimensional screw

25. Diagnosis for 4 years old child – progenic bite. Objectively: determined by reverse incisal overlap $\frac{1}{2}$ of the height of the crown, the lower incisors frontal inclination, upper incisors in retruded position. The canines is neutral. Child has upper lip sucking habit. The Kerbits' shield by location place is:

vestibular
intraoral teeth
cervical
head
intraoral palatal

26. The child 9 years old 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 $\frac{1}{3}$, sagittal gap is 4 mm, missing upper lateral incisors, the first permanent molars relation is III class Angle. Define the tactics of treatment:

determining of 12,22 teeth germs presence
correction of the lower dental arch dimensions
distal displacement of the mandible
correction of the upper dental arch sizes
correction of lower lip tone

27. The child 9 years old 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 $\frac{1}{3}$, sagittal gap is 4 mm, missing upper lateral incisors, the first permanent molars relation is III class Angle. To eliminate 11,21 teeth retrusion can be used in the design of the appliance:

pushers
hand-shap spring
vestibular arc
inclined bite plane
occlusal bite plane

28. The child 5 years old with progeny has no signs of cusps abrasion. Define tactics of treatment in this case:

milky teeth abrasion
myogymnastic
clinical supervision
to recommend the occlusal pressure
to recommend massage of the upper jaw

29. The child 5 years old with has signs of prognathic jaws relation. For the treatment of this disease can be used:

Bruckl appliance

Nord appliance

Kerbits' shield

Dass activator

Katz plate

30. In patient 12 years old is determined: reversed incisor contact, with the presence of space. At the closing of the teeth in habitual occlusion is determined the pressure of the tip tongue on the lower frontal teeth. The first permanent molars relation by III class Angle. How begin to treat this problem:

to change the tongue position

to appoint the ENT doctor advice

clinical supervision

oral cavity sanitation

paediatrician consultation

31. In a patient 12 years old is determined: reversed incisor contact, with the presence of space. At the closing of the teeth in habitual occlusion is determined the pressure of the tip tongue on the lower frontal teeth. The first permanent molars relation by I class Angle. To change the tongue position is shown by using:

Kraus' shield

Kerbits' shield

Shonher shield

Muhleman appliance

Frenkel appliance

32. The patient 10 years old is determined tongue with lateral teeth imprints. The upper and lower incisors have protruded position. The lower incisors overlap the upper 1/3 of the height. Sagittal space is 2mm. The first permanent molars relation by III class Angle. For treatment of this anomaly, the patient has the Bruckl appliance. What are the mechanism of action of this appliance:

combined

functionally directing

mechanical

functional acting

functional

33. The patient 10 years old is determined tongue with lateral teeth imprints. The upper and lower incisors have protruded position. The lower incisors overlap the upper 1/3 of the height. Sagittal space is 2mm. The first permanent molars relation by III class Angle. For treatment of this anomaly, the patient has the Bruckl appliance. Why it was necessary to begin treatment in this situation:

to normalize the tongue pressure language
surgeon dentist
myogymnastics for tongue muscles
endocrinologist consultation
consultation with an ENT doctor

34. The clinic contacted the parents with a child 3 years old for a consultation about dental malocclusions. The boy is determined by the protruding lower lip. Lower front teeth cover the upper teeth on 3mm saved contact. Dad diagnosed with class III. According to the mother of forward position of the mandible were observed in the child since birth. Define tactics of conducting the patient:

myogymnastic
to delay mandible growth
clinical supervision
massage of the lower jaw
massage the upper jaw

35. The clinic contacted the parents with a child 3 years old for a consultation about dental malocclusions. The boy is determined by the protruding lower lip. Lower front teeth cover the upper teeth on 3mm saved contact. Dad diagnosed with class III. According to the mother of forward position of the mandible were observed in the child since birth. The child is assigned myogymnastics. The principle of myogymnastics in this case will be to exercise the muscles:

lateral pterygoid
circumoral muscle
medial pterygoid
square muscle of the lower lip
neck superficial muscles

Literature

Main:

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