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

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protocol № 1
Head of department _____ L.V. Smaglyuk

METHODICAL RECOMMENDATION
for independent work of students during the preparation
to practical lessons and the lessons

Academic discipline	Orthodontics
Module №3	Children's dental prosthetics
The theme of the lesson № 14	Orthodontic treatment planning.
Course	V
Faculty	Preparation of foreign students

Poltava 2017

1. The relevance of the topic.

Orthodontic treatment is a complex of measures directed at the normalization of morphological functional and aesthetic condition of the dentition. Therefore, knowledge of the characteristics of orthodontic examination, diagnosis and choice of treatment method is important in the preparation of the dentist - orthodontist.

2. Specific objectives:

Features of orthodontic examination of the patient.

Age-related features of orthodontic treatment.

Indications for orthodontic treatment.

Contraindications to orthodontic treatment.

Principles and methods of the clinical examination of the orthodontic patient.
interpretation of the results of the clinical examination of the orthodontic patient.

Principles and methods of assisted methods of research in orthodontics.
interpretation of the results of auxiliary methods of research orthodontic patient.

Principles of construction of orthodontic diagnosis.

Methods of orthodontic treatment; fundamentals of design removable orthodontic appliances mechanical, functional and combined action.

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

Name of previous disciplines	Skills
1. Anatomy	To know the structure of face bones structure.
2. Normal physiology	To describe the physiological act of a mastication, swallowing, speaking, breathing.
3. Radiology	To know radiology diagnostic, cephalometrics. To determine the form of malocclusion according to the lateral cephalometric.
4. Pediatric dentistry	To know the growth and development of the facial skeleton and of muscles in the age aspect, the timing of teething. To master principles of rehabilitation of the oral cavity in the prevention of a vertical malocclusions.
5. Prophylaxis of stomatological diseases	To write down the tooth formula (clinical, anatomic, by WHO), determine bite period and dental age.
6. Propedeutics of a therapeutic odontology	To define teeth according to the bite: temporary or constant occlusion.
7. Orthodontics (intra-subject)	To know construction of orthodontic

	appliance, principles of their design; to choose a rational orthodontic appliances for malocclusion treatment.
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4. Tasks for independent work during preparation to the lesson and 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.Objective examination	Stage clinical examination, during which examine the patient (posture, face) and maxillofacial region.
2.Inspection	Main reception of objective examination of the orthodontic patient consists of: an overview, definition of physique and structural features of the person, the inspection of the oral cavity.
3.Radiography	Method of roentgenologic examination, which with the help of x-ray radiation sensitive to it material (x-ray film) receive fixed image of the investigated object.
4. Methods of treatment of dento-facial anomalies.	Biological, instrumental, surgical, prosthetic, complex (combination of several methods of treatment).
5. Plan of orthodontic treatment	Reflect the therapeutic actions to achieve the same goals by different methods.

4.2. Theoretical questions to the lesson:

1. List the stages of objective examination of orthodontic patient.
2. Description of the bite in three planes.
3. List additional methods of research in orthodontics.
4. Indications for the cephalometrics.
5. Contraindications for orthodontic treatment.
6. List the methods of orthodontic treatment.

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

1. A clinical examination of the orthodontic patient.
2. Define the basic data of the anamnesis of life and history of the disease.
3. Determine the aesthetic forecast orthodontic treatment of the patient with dento-alveolar anomalies on the basis of the anthropo- and photometric studies.
4. Be able to choose the most suitable design orthodontic apparatus for treatment of different types of dento-maxillary anomalies and deformations bite.

5. Assign appropriate x-ray study at different types of dento-maxillary anomalies and deformations of the bite.
6. Build in the abstract of the logical structure of the stages of the clinical examination.
7. Make a plan of orthodontic treatment according to model, panoramix, photo of the patient.

The content of the topic:

Treatment plan is an outline of all the measures that can be best instituted for a patient so as to offer maximum, long-term benefits.

Patients seek orthodontic treatment for a variety of reasons. The orthodontist should plan out a treatment modality based on thorough examination and sound diagnosis in a systematic fashion. As no simple formula look-book approach exists, each case should be assessed and a customized treatment plan formulated to suit the individual patient.

From a patient's point of view, the basic need for orthodontic treatment is improvement in esthetics and function. The orthodontist has 1 added goal in the form of treatment stability, the orthodontist should aim at providing quality treatment that will remain relatively intact for many years to come after the therapy is completed.

Most patients are satisfied once the anterior teeth are straightened. But it is the responsibility of the orthodontist to educate the patient on the importance of moving teeth to positions that stand for stability. The orthodontist should not succumb to the temptation of terminating the treatment as soon as the anterior teeth are straightened as such treatment invariably results in unstable dental positions that tend to relapse.

In many cases achieving all the three goals i.e., esthetics, function and stability may be quite difficult. The orthodontist should strike a balance in fulfilling the major esthetic desires of the patient within the bounds of keys that stand for stability.

ENLISTING THE TREATMENT OBJECTIVES

The orthodontist should enlist the problems that have to be attended to in a decreasing order of priority. The problem list helps in setting up objectives and possible solutions to the problem.

While setting up the objectives, the patient's chief complaint and parental desires should be, given adequate weightage. Most patients seek treatment to improve esthetics or function. If the orthodontist considers certain other objectives more important, for an overall solution to the problem or to achieve long-term stability, then adequate explanation should be given to the patient.

The orthodontist must be realistic in setting up objectives. They should reflect the patient's needs, the doctor's own level of competence, patient co-operation, etc.,.

ASSESSMENT OF GROWTH POTENTIAL

The growth status of an individual is an important factor that should be considered while planning treatment.

A patient who is still growing presents the orthodontist with numerous options that exploits the individual's growth potential. The orthodontist can modulate growth of the dento-facial structures, can guide teeth into more favorable positions and can undertake therapeutic procedures to prevent and intercept malocclusions. In an adult, the treatment options are limited to moving teeth and surgical correction.

The growth status of the individual should thus be determined prior to treatment planning so as to carry out appropriate treatment procedures.

ASSESSMENT OF ETIOLOGIC FACTORS

The etiologic factors responsible for the malocclusion should be determined and adequate steps should be planned for their elimination. The continued presence of the etiologic factors can constitute a severe limitation to the corrective procedures to be undertaken and may also predispose to relapse of a treated malocclusion. Comprehensive orthodontic therapy should thus involve removal of the cause. While this is possible in cases where the etiology is obvious, it may not be possible if the cause is elusive or unknown.

PLANNING THE FINAL INTERINCISAL RELATIONSHIP

Establishment of an ideal inter-incisal relationship is one of the prime objectives that should be planned.

Class I Incisor relationship

In a patient presenting with a Class I malocclusion, the inter-incisal relation is usually satisfactory. Thus provision should be made in the treatment plan to preserve the integrity of this relationship.

Class II, division 1 Incisor relationship

In a patient presenting with Class II, division 2 malocclusion, the severity of the presenting skeletal discrepancy usually determines the choice of treatment and mechanics. If these patients present with an underlying Class I skeletal pattern, then retroclination of the maxillary incisors may be sufficient to produce a normal interincisal relationship. In case of a mild Class II skeletal pattern, a camouflage treatment by retroclination or bodily lingual movement of the maxillary incisors using fixed appliances may produce satisfactory results. This may often require extraction of some teeth to produce satisfactory results. Severe Class II skeletal patterns often require growth modification (in the growing) or surgical treatment (in case of non-growing adults. Growth modification is done by use of myofunctional appliances such as activator, bionator, herbst appliance, etc.,.

Class II, division 2 Incisor relationship

In Class II, division 2 cases that present with a Class I or mild Class II skeletal pattern, uprighting the maxillary incisors by application of a palatal root torque may produce the desired inter-incisal relation. However in case of an underlying severe Class II skeletal pattern, it may be advisable to procline the maxillary incisors to produce a Class II, division 1 pattern, followed by growth modification. In case of non-growing individuals surgery may be required.

Class III Incisor relationship

Class III patients who present with a forward path of closure usually present a better prognosis. In these patients, referred to as postural or pseudo Class III

relationship, removal of the occlusal interference by proclination of the maxillary incisors would often produce a satisfactory inter-incisal relation. When the underlying Class III pattern is very severe, a stable inter-incisal relation is often achieved by proclination of maxillary incisors and retroclination of the mandibular incisors. However natural compensations that might have occurred (i.e. retroclination of lower incisors and proclined upper incisors) may affect the prognosis. In very severe Class III cases surgical correction may have to be considered.

PLANNING SPACE REQUIREMENTS

Most malocclusions require space to move teeth to more ideal positions. The following are some of the conditions that require space for correction.

Correction of crowding:

Correction of crowded teeth requires space. The rule of thumb is that for every mm of crowding, a mm of arch length (space) is required.

Rotations:

Rotated anterior teeth occupy lesser arch length. Hence space is required for derotating these teeth, which is calculated by subtracting the distance between the proximal surfaces of adjacent teeth from the total mesio- distal width of the rotated teeth.

Levelling the curve of Spee:

One of the common features associated with, skeletal malocclusion is an increased curve of Spee. A flat arch occupies more space than one with an excessive curve of Spee. Some provision should thus be made in the treatment plan to provide space for levelling. Failure to do so results in proclination that is unstable.

Correction of proclination:

Retraction of proclined teeth requires space. In case of spaced dentition, the existing spaces can be made use of to correct the proclination. If the dentition is not spaced, then alternate ways of gaining space should be planned. For every one mm of reduction in proclination two mm of space is required.

Molar correction:

Presence of an unstable molar relation at the end of treatment is a cause of instability. The molars should be moved to achieve good inter-cuspation.

Space for anchorage loss:

Most tooth movements are accomplished by appliances that anchor on to certain other teeth in the dental arch. Some amount of movement of the anchor teeth should be expected. While trying to retract the anterior teeth, the molars also invariably move forward to a certain extent. This loss of space is called anchorage loss. Studies have shown that in extraction cases, almost 40% of the space is lost by mesial movement of the posterior anchor teeth.

The orthodontist should sum up the space required to correct the malocclusion. Once the total space requirement is known, the different avenues to acquire the needed space should then be explored. Some of the methods of gaining space include:

- a. Use of existing spacing.

- b. Proximal stripping for expansion.
- d. Extraction.
- e. Distalization.
- f. Uprighting of molars.
- g Derotation of posterior teeth.
- h. Proclination of anteriors.

PLANNING EXTRACTIONS

Extraction of teeth has become an integral part of comprehensive orthodontic procedure. Teeth are often extracted whenever there is arch length-tooth material discrepancies resulting in crowding or proclination. In addition teeth are also extracted to correct inter-arch relationship.

Whenever extractions are planned in a Class I skeletal or dental pattern, it is vitally important that extractions are done in both the upper and the lower arches so as to maintain the buccal occlusal relationship.

In most Class II cases, the upper dental arch is forwardly placed or the lower arch placed back. Thus by extracting only in the upper arch it is possible to reduce the abnormal upper proclination and also to discourage the forward development of the upper arch. Whenever extractions are done only in the maxillary arch, we would have at the end of the treatment a Class II molar relation and a Class I canine relation. In case of lower arch crowding or when the molars are not in full Class II occlusion, it may be necessary to extract in both the upper as well as the lower arches. In these patients, a Class I molar and canine relation should be achieved at the end of the treatment.

In Angle's Class III, it is beneficial to avoid extraction in the upper arch as it may retard the forward development of the maxilla. Angle's Class III cases are preferably treated by extraction only in the lower arch or by extraction in both arches. In case only lower teeth are extracted, at the end of treatment a Class III molar relation and a Class I canine relation is achieved. However if extractions are planned in both the upper as well as the lower arches, we should have a Class I molar and canine relation at the end of the treatment.

PLANNING ANCHORAGE

Anchorage consideration forms an important part of the treatment planning exercise. All efforts should be taken to minimize unwanted tooth movements. Failure to plan anchorage invariably results in failure of treatment mechanics.

The anchorage demand for an individual patient depends on the following factors:

Number of teeth being moved:

The greater the number of teeth being moved, the greater would be the demand on anchorage.

Type of teeth:

Tooth movement involving multi-rooted posteriors offer greater strain on anchorage than tooth movement involving smaller teeth.

Type of tooth movement:

Tipping tooth movements are less demanding on the anchorage than bodily tooth movements.

Duration of Treatment:

Complicated orthodontic treatment of prolonged duration strains the anchor teeth, resulting in greater anchorage loss.

Once the anchorage demand is known it is possible to classify the case as maximum, moderate or minimum anchorage demand case. In case of maximum anchorage demand, adequate reinforcement of the anchorage should be planned.

SELECTION OF APPLIANCE

The next step in treatment planning is the selection of appliance, which is based on a number of factors.

Growth Potential:

Growing patients who exhibit skeletal malocclusion should be treated with appliances that modulate the growth so that the existing skeletal problem is solved or at least not worsened.

Type of tooth movement:

Removable appliances can be used in patients requiring simple tipping movement. Whenever bodily tooth movements are required, fixed orthodontic appliances should be used. Patients requiring complicated tooth movements including rotation, root movements, axial movements (intrusion or extrusion) are best treated with fixed appliances.

Oral Hygiene:

Maintenance of good oral hygiene is an essential part of orthodontic treatment. However fixed appliances place an additional demand as they pose greater risk of caries, decalcification, plaque accumulation, etc.,.

PLANNING RETENTION

It is now accepted that teeth once moved, tend to go back to their initial position. The potential for relapse is increased by the presence of certain factors, which are listed as follows:

Stretched periodontal ligament:

The stretched gingival fibers are a frequent cause of relapse in case of rotated teeth, since these fibers take a long time to reorganize around their new positions. Thus adequate retention for an appropriate period should be planned depending on the type of malocclusion.

Unstable occlusion:

Teeth placed in unstable position at the end of orthodontic therapy tend to relapse.

Continuation of growth pattern:

Continuation of the growth pattern that has caused a skeletal malocclusion after orthodontic therapy results in resurfacing of the malocclusion after treatment.

Thus retention should be planned keeping in mind all the factors that may predispose to relapse. In addition to the use of retainers some adjunctive procedure might have to be carried out so as to aid in retention.

Materials for self-control:

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

1. Write down the graphological structure of the planning stages of orthodontic treatment.
2. Write in the abstract of the graphological structure of the choice of methods of treatment given the patient's age, the severity of the anomalies, complexity of treatment and type of behavior of the patient.

B. Tasks for self-control:

1. What investigation method is used to confirm the diagnosis "dental retention"?
 - a) x-ray diagnostics
 - b) Pont's method
 - c) gnathodynamometry
 - d) electromyography
 - e) Korkhaus method
2. With the help of what diagnostic test is it possible to diagnose distal occlusion?
 - a) Eschler- Bittner
 - b) 1st and 2nd Jlyina- Markosian's tests
 - c) 3rd Jlyina- Markosian's tests
 - d) 2nd Jlyina- Markosian's tests
 - e) 4th Jlyina- Markosian's tests
3. At what age Frankel's appliance be indicated for distal occlusion treatment can be indicated?
 - a) 6-9 years
 - b) 29-30 years
 - c) 15-17 years
 - d) 3 years
 - e) 11-13 years
4. What type of Frankel's appliance may be indicated for the treatment of distal occlusion complicated with deep bite?
 - a) the 2nd type
 - b) the 4th type
 - c) the 1st type
 - d) the 3rd type
 - e) the 1-a type
5. What kind of treatment of distal occlusion is used in the primary dentition?
 - a) functional appliance
 - b) all answers are right
 - c) surgical treatment
 - d) prophylactic measures
 - e) treatment by using the mechanical action devices

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6. A 14-year-old patient complains of cosmetic defect. X-ray examination revealed that the 23 tooth has vestibular position in dental arch, it is enough space for it. Data of the biometrical measurements on the models: the distance between the 22 and the 24 teeth is $\frac{1}{3}$ the width of 23 tooth. Make treatment plan.

- a) extraction the first premolars and move 23 tooth in the correct position
- b) myogymnastics
- c) Shonher's appliance
- d) move 23 tooth into correct position
- e) extraction the first premolars.

7. A patient is 11 years old. During the examination it was diagnosed symmetrically narrowed upper dental arch. What removable appliance is indicated in this case?

- a) removable appliance on the upper dental arch with a screw
- b) Frankel's function regulator
- c) removable appliance on the upper dental arch with inclined plane
- d) appliance with functionally directing action
- e) removable appliance on the upper dental arch with biting platform

8. The most common cause of narrowing indicated in this case?

- a) mouth breathing
- b) calcium dysbolism
- c) bruxism
- d) infantile type of swallowing
- e) adentia

9. An 18-year-old patient has upper frontal teeth protrusion with diastema and sagittal gap more than 5 mm. What treatment is indicated in this case?

- a) combined treatment (orthodontic combined with surgical)
- b) surgical treatment
- c) myogymnastics treatment
- d) prophylactic appliances treatment
- e) physiotherapeutic treatment

10. A 20-year-old patient has upper frontal teeth protrusion, sagittal gap 6 mm. Orthodontist decided to treat this patient with combined methods. Which teeth must be removed?

- a) first premolars
- b) second premolars
- c) second molars
- d) lower central incisor
- e) upper canine

11. A 7-year-old patient comes to the orthodontist. Objectively: there is a protrusion of frontal teeth in the upper jaw and the lower jaw has distal position. What treatment is indicated in this case?

- a) complex treatment (myogymnastics and Frankel's 1st type appliance)
- b) removable appliance with functionally directing action
- c) Muellemans propulsor
- d) myogymnastics
- e) Osadchyi or Aisenberg appliances.

12. An 8-year-old patient complains of cosmetic defect. During intraoral examination it was revealed that the prognathic occlusion is complicated with open bite. What apparatus may you use for normalization of the breathing and swallowing functions?

- a) Kraus appliance
- b) vestibular shield
- c) Frankel's 3rd type
- d) blue preorthodontic trainer
- e) Bynins gum shield

13. 10-year-old patient complains of cosmetic defect. During the intraoral examination it was revealed that lower jaw is undeveloped and upper jaw is overgrowing, with the narrowing of both jaws. Such patient can be treated with?

- a) Andresen-Houpl's appliance
- b) Craus vestibular plane
- c) Bynin's gum shield
- d) Kalvelis
- e) blue preorthodontic trainer

14. During the intraoral examination 9-year-old patient it was revealed that the posterior occlusion is complicated with deep overbite. What type of apparatus may be offered for this treatment?

- a) removable appliance with functionally directing action
- b) Shonnch's vestibular plane
- c) mechanical action
- d) functionally acting
- e) Kraus vestibular plane

15. A 9-year-old girl appealed to the orthodontist with complaints on moving her chin forward. Objectively: increasing of lower third of a person's face. Nasolabial folds are deep. In the frontal area there is anterior crossbite, overjet is of 4 mm. There are spaces between lower frontal teeth. Relationship of posterior teeth - I Class by Angle. Put a diagnosis?

- a) False progenia
- b) protrusion of upper incisors
- c) real progenia

- d) joint progenia
- e) spacing on lower jaw

16. During routine examination of a 7 year-old boy was revealed mesial occlusion with undevelopment upper jaw, diastema are absent. What type of appliance may be offered for this treatment?

- a) Frankel's III
- b) Frankel's II
- c) Frankel's IV
- d) Frankel's IV
- e) Frankel's I

17. During the examination of 5 year-old patient was revealed that lower teeth covering the upper ones in the area of incisors and canines. Cutting edges without signs of abrasion. What method of treatment would be most effective in this age?

- a) abrasion of the cutting edges of canines
- b) surgical treatment
- c) physiotherapeutic treatment
- d) prophylactic appliances treatment
- e) myogymnastics

18. When patient has the shortened tongue frenulum, what treatment is indicated in this case?

- a) frenulum plastic surgery
- b) combined treatment(orthodontic combined with surgical)
- c) physiotherapeutic treatment
- d) myogymnastics treatment
- e) prophylactic appliances treatment

19. A 8-year-old child during examination were found that all temporary molars of the upper dental row were removed. The lower incisors are in contact with mucous membranes of the palate, crowns of 35 and 45 teeth are affected by caries. Marked signs of formation of deep bite. History: milk molars on the upper jaw were removed from the complications of caries in 4 years . What is the reason for the formation of anomalies?

- a) premature extraction of 54, 55, 64, 65 teeth
- b) premature extraction of 85, 84, 75, 74 teeth
- c) hereditary factor
- d) bad habits
- e) carious lesions of 35, 45 teeth

20. A 5- year-old boy observed of absence thremas and diastema on the lower jaw. Temporary occlusion period. The upper jaw - small thremas between incisors. Deep overjet in the frontal area. What are the basic principles of prevention to be applied in this case?

- a) stimulation of the growth of lower jaw
- b) removable orthodontic apparatus
- c) non-removable orthodontic appliances
- d) remove one milk tooth
- e) suppression of growth of the upper jaw

21. A 9 year-old patient addressed to the orthodontist. During the examination it was revealed deep bite combined with mesial occlusion. For the treatment of mesial deep bite it can be used?

- a) Brakley's appliance
- b) plate with loops Rudolph
- c) vestibular shield
- d) physiotherapeutic treatment
- e) myogymnestic

22. A 10 year-old child complains of bad chewing of food. From the dental history it was revealed milk molars in the mandible have been erupted with caries complications at the age of 3 year-old. Objectively: the lower third of the face is shortened, symmetrical, face is not proportional. Choose the correct device for the treatment of deep bite during the change of teeth?

- a) Andresen-Haupl's activator
- b) Blue preorthodontic trainer
- c) Frenkel's
- d) Hinz's plate
- e) surgical treatment

23. For the treatment of deep occlusion complicated prognathic which appeared due to biting of lower lip during temporary occlusion?

- a) Muellemans propulsor
- b) Andresen-Haupl's activator
- c) Plate with loops Rudolph
- d) Brakley's appliance
- e) RF-IV

24. A 8 year-old child was referred to the orthodontist. During the examination it was revealed that all temporary molars of the upper dental arch have been removed. The lower incisors are in contact with mucous membrane of the palate. Where must the biting platform be located during the treatment of deep bite?

- a) in the frontal area
- b) in the lateral area
- c) in the frontal and in the lateral areas
- d) in the buccal area
- e) there is no correct answer

25. For the treatment of deep bite the appliance consists of?

- a) biting plane in the frontal region
- b) occlusal side plates in lateral areas
- c) an inclined plane
- d) vestibular arches
- e) occlusal side plates lining in lateral areas with teeth prints

26. A 10-year-old girl complains of an aesthetic flaw. The anamnesis states, that she had been sucking her right thumb up to the age of 7. Objectively: the face lower third is somewhat reduced. The sagittal fissure between the upper and lower incisors, is 9 mm wide, class 2 according to the Angle classification. Eshler-Bittner test leads to initial temporary improvement of the girl's face, followed by renewed deterioration. What clinical malocclusion is the most probable in this case?

- a) mandibular micrognathia
- b) maxillary macrognathia
- c) maxillary macrognathia and mandibular micrognathia
- d) maxillary prognathism with lateral compression
- e) mandibular retrognathia

27. A 5 year-old boy orthodontist revealed deep bite. For treatment of this pathology one must use miogymnastic. Do the exercise for the muscles, moving the lower jaw?

- a) the lower jaw slowly move forward to the incisor overlap
- b) click the tongue
- c) count with the tongue teeth without opening the jaws
- d) there is no correct answer
- e) play on the wind instruments, sing

28. What is the tactics of treating deep bite in period of temporary occlusion?

- a) oral cavity sanitation, hard food chewing, pernicious habits elimination, functional appliance
- b) pernicious habits elimination, mechanically acting devices
- c) does not require treatment at this stage
- d) oral cavity sanitation, soft food function devices
- e) oral cavity sanitation, soft food, mechanically acting devices

29. Development of prognathic occlusion' gnathic forms is assisted by the following factors?

- a) distal position of the mandible with temporomandibular joint relative to the upper jaw and the plane of the base of the skull
- b) changes in the inclination of the upper incisors to the upper jaw plane
- c) change of lower incisors inclination to the mandible plane
- d) resize of incisors angle
- e) increase in the basal angle.

30. Parents of an 8 year old boy complain about a cosmetic defect, inability to bite off food. The child often suffers from acute viral respiratory infections. Objectively: chin skewness, mental fold is most evident. The lower lip is averted, superior central incisor lies on it, nasolabial fold is flattened. In the oral cavity: occlusion period is early exfoliation period. The upper jaw is narrowed, there is gothic palate. Frontal teeth have fan-shaped position. Sagittal fissure is 6 mm. In the lateral parts contact of homonymous teeth is present. What is the most probable cause of dentoalveolar deformity?

- a) pathology of upper airways
- b) missing of Tselinsky step
- c) endocrinal diseases
- d) untimely sanitation of oral cavity
- e) gestational toxicities

31. A 8-year-old child complains of : adenoid growths second degree. The child adenoid type face, in the mouth - narrowing and shortening of the lower jaw, narrow upper jaw, gothic palate between frontal teeth vertical slit 3 mm. What is the main cause of such symptoms?

- a) mouth breathing
- b) sucking of the lower lip
- c) heredity
- d) prolonged sucking of the finger
- e) laying of the tongue between tooth rows in the frontal area

32. A 5- year-old boy complains of deformation of the face. On examination revealed smoothing of nasolabial folds and a chin, closing lips with stress. In the oral cavity there is no front group of teeth. Type of swallowing - infantile. What pathological bite can develop in the child in the future?

- a) open bite
- b) retrusion of the front teeth
- c) deep bite
- d) vestibular position of the canines
- e) anomalies in the formation of dental arch

33. What is the tactic of cross bite treatment in the period of temporary occlusion?

- a) oral cavity sanitation, bad habits elimination
- b) functional apparatus
- c) does not require treatment at this stage
- d) hard food mastication
- e) oral cavity sanitation, soft food, mechanically acting devices

34. What appliances are used to treat open bite in the period of permanent occlusion?

- a) bracket system
- b) appliance on the upper jaw with an inclined plane in the frontal part

- c) Brukl's device
- d) preorthodontic trainer
- e) Andresen-Houpl's device

35. Parents of a 8-year-old child appeared to a hospital with complaints of aesthetic defect. Objectively: smoothed nasolabial and chin folds, lips nanclosed in the quiescence(elongated lower part of face). During the intraoral observation you can see vertical gap between teeth and dental arches closure which appeared as a result of pernicious habits of sucking fingers and tongue. What appliances would you to wean a child bad habits?

- a) preortodontic trainer
- b) FR I
- c) Angel's appliances
- d) bracket system
- e) appliances with Rudolph loops

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