

MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN
FEDERATION

Federal State Autonomous Institution

higher professional education

"Kazan (Volga) Federal University"

Institute of Fundamental Medicine and Biology

Department of Dentistry and Implantology

METHODICAL DEVELOPMENT

practical training for students of the 5th course of the 10th semester in
dentistry.

Тема: Diagnosis and treatment of mesial occlusion. Classification, etiology,
treatment principles.

Lesson purpose. To teach students the diagnosis of mesial occlusion based on clinical examination and the use of additional research methods. To familiarize with the methods of treatment of this anomaly of occlusion, with the devices used to treat them.

Lesson plan:

1. The teacher determines the initial level of knowledge of students through a survey, group discussion, testing -30 min;
2. The teacher corrects the initial level of knowledge, reveals lagging students -15 min;
3. The teacher checks the readiness of jobs, distributes students to jobs-10 min;
4. Work with literary sources. Compilation of a compendium-60 min;
5. Oral analysis of the material -120 min;
6. Testing -35 min.

Class equipment:

1. A multimedia audience with a capacity of 20 people;
2. Educational literature;
3. Visual aids: phantoms, demonstration models of the jaws, tables, diagrams, film and video films, computer presentations.
4. Dental education tools: booklets, brochures, memos, stands, exhibitions, posters, etc.
5. Control models of children of different ages with mesial occlusion before and after treatment, OPTG, TRG.

List of literature for class preparation.

1. Yakhina Z.Kh. Teaching aid on orthodontics for students: 2017
2. Khoroshilkina F.Ya., Persin L.S., Okushko-Kalashnikova V.P. Orthodontics. (Moscow, 2005, 453 pp .; ill. Bibliography p. 408-447 (542), Subject index p. 488-453 2000 copies (Code number 616.34-089.23).
3. W. Profit Modern Orthodontics 2016

4. Persin L.S. Orthodontics. Diagnosis and treatment of dentoalveolar anomalies: a Guide for doctors.-M.: Publishing House "Medicine", 2007-360s .; Il.-ISBN 5-225-04819-6.

Mesial occlusion

Mesial occlusion refers to anomalies of occlusion in the sagittal plane, characterized by the closure of the first permanent molars of the 3rd class of Engle. In the anterior section, the lower incisors overlap the upper ones (reverse incisal



occlusion or reverse incisal disocclusion).

ETIOLOGY

- heredity;
- maternal diseases during pregnancy;
- natal injuries;
- bad habits;
- macroglossia;
- Imperfect tubercles of milk fangs;
- fissures of hard and soft palate;
- impaired endocrine gland function;
- son with his head down on his chest;

- an adentia of the upper teeth;
- hypertension of lower teeth, etc.

CLINIC

There are two forms of mesial occlusion: true and false.

True mesial occlusion occurs as a result of excessive development of the lower jaw with a normally developed upper jaw.

False mesial occlusion is divided into two varieties (according to L.V. Ilyina-Markosyan):

- a) the front, due to the underdevelopment of the upper jaw, especially its frontal section;
- b) forced when the child can push the lower jaw back and set the front teeth in a direct bite.

CLINIC

FACIAL SIGNS: during an external examination of patients, first of all, a violation of the shape of the face attracts attention. When viewed in profile, a sharp protrusion of the chin and lower lip forward is noticeable. The upper lip and middle part of the face sinks.

INTERNAL ORTOTIC SIGNS: the dentition of the lower jaw is located in front of the upper, the dental arch is wider than the upper, which explains the nature of the closure of the front and side teeth. Anterior teeth are characterized by reverse overlap from small with contacts to deep with sagittal fissure. In the region of the posterior teeth, a Engl class III cusp: the mesial-buccal cusps of the upper first molars are located behind the inter-tuberos grooves of the lower first molars.

FUNCTIONAL VIOLATIONS: the act of biting is violated, the chewing function due to the predominance of articulated movements of the lower jaw. This is at the same time a cause of dysfunction of the temporomandibular joint (clicking, crunching, tinnitus, etc.). With mesioocclusion, focal changes in the periodontium of incisors and fangs are possible, due to the lack of function in the presence of a sagittal fissure or overload due to reverse overlap.

FALSE MESIOOCCLUSION due to underdevelopment of the upper jaw, its distal location in the skull or mesial displacement of the lower jaw. With the underdevelopment of the entire upper jaw, the middle third of the face sinks to a greater or lesser extent. The lower jaw is normal in size. When examining the dentition, their progenic ratio is determined. The upper dentition is narrowed and

smaller than the lower. The first permanent molars are in a neutral ratio (first class according to Engle).

With anterior pseudo-mesio occlusion, the area of the upper jaw is flattened, but facial features are poorly expressed, a progenic relationship is only between the front teeth. Between them, contact remains, and therefore, areas of erosion are found on their vestibular surface.

FORCED MESIOOCCLUSION is a form of false mesioocclusion that has developed as a result of the habit of pushing the lower jaw forward. It occurs in early childhood, i.e. in the period of dairy and at the beginning of shift bites. The most common cause is uneven abrasion of milk teeth, especially milk canines. They interfere with the correct closing of the teeth, which forces the child to push the lower jaw. In this case, the joint and muscles adapt to the new position of the jaw and, accordingly, the facial skeleton is formed.

DIAGNOSTICS

When planning the treatment of mesial occlusion and determining its prognosis, the severity of maxillofacial disorders should be determined.

At grade 1, the closure of the first permanent molars and fangs according to Angle Grade 3 does not exceed $\frac{1}{2}$ the tubercle of the first permanent molar, the sagittal fissure is absent, the depth of the back incisal overlap is minimal, moderate or deep. При 2 степени смыкание клыков и первых постоянных моляров по 3 классу Энгеля равно величине одного бугорка первых постоянных моляров, сагиттальная щель между резцами не превышает 3 мм; имеет место ретрузия резцов нижней челюсти.

At grade 3, the ratio of fangs to the first permanent molars in the 3rd grade of Engle is from $\frac{1}{2}$ a crown of the first permanent molar or more; sagittal gap between the incisors of the upper and lower jaws - from 3 mm or more.

To determine the severity of mesial occlusion, it is necessary to conduct a tele-radiographic examination of the head. On the TWG of the head in the lateral projection, determine the body length of the upper and lower jaws, their position in relation to the anterior part of the base of the skull, the relative position of the apical bases of the jaws, the main direction of growth of the jaw bones. Based on the analysis of lateral TRH of the head, it was found that mesial occlusion can be of a gnathic form and is due to the posterior position of the upper jaw in the facial skeleton, underdevelopment of the upper jaw, and excessive development of the lower jaw.

The position of the heads of the lower jaw in the mandibular fossa with different forms of mesial occlusion is not the same. With true and false mesioocclusion, the head is located normally, i.e. deep in the pit. With forced mesioocclusion due to

the displacement of the lower jaw forward, the head occupies a medial position. The position of the head is determined on the Rg-gram of the temporomandibular joint.

The diagnosis of various forms of mesial occlusion is made on the basis of clinical examination data, the results of applying clinical functional tests to determine the lower jaw forward, studying diagnostic models of the jaw and face photographs, analyzing orthopantomographic examination of the jaw, measuring the lateral TRH of the head and tomograms of the temporomandibular joints.

TREATMENT

Treatment of mesial occlusion is aimed at stimulating the growth of the upper jaw or delaying the growth of the lower jaw and depends on the form of mesial occlusion and the age of the patient.

During the temporary bite, the main attention is paid to normalizing the growth of the alveolar processes and jaws during eruption of the front teeth. If the newborn has an underdevelopment of the upper jaw and an increase in the size of the lower, then massage the alveolar process of the upper jaw in the anterior section to stimulate its growth. With a shortened frenulum of the tongue, plastic surgery is performed, and when the body is weakened, general strengthening and anti-rheumatic drugs are used.

In the period of a temporary bite, one of the main tasks of treatment is the elimination of bad habits in children and the normalization of breathing, swallowing, speech, and chewing functions (learning to eat hard foods). To wean a child from oral breathing, sucking fingers, upper lip, various objects aged 2 to 5 years, a vestibular plate can be recommended.

At the age of 3-4 years, with mesial occlusion, combined with a shift of the lower jaw forward, and a slight reverse incisal overlap of up to 0.5 mm, they seek to remove obstacles to the distal displacement of the lower jaw and promote the proper development of dental arches. To do this, selectively grind the cutting edges of the upper and lower incisors, as well as tubercles of the fangs until the incisors are installed in the marginal closure. Subsequently, a massage is prescribed on the region of the alveolar process of the upper jaw from the oral side in its front section. It is recommended to massage 2 times a day (morning and evening) for 2 minutes in order to deflect the upper front teeth in the vestibular direction. If with mesial occlusion, combined with extension of the lower jaw, there is a deep incisal overlap, then at the age of 3-4 years you can change the location of the axes of the upper incisors, and according to indications the lower ones using the Bruckle apparatus. In the period of its use, it is advisable to recommend that children use a hat with a chin sling and an extraoral traction.

Of the devices at the end of the temporary bite, you can use type 3 Frenkel function regulators, Andresen-Goipl, Klammt activators.

Treatment during intermittent bite

In this period of development of the bite of the child, the pathogenetic method is combined with the hardware. Elimination of bad habits, myogymnastics, orthodontic cap with chin sling, sanitation of the oral cavity and ENT organs, Andresen-Goiplya activators, open activator Klammt, Kappa Bynina, Schwartz, Katz crowns, Basharova apparatus, expanding plates, spatula exercise (in early shift bite when there is space).

Mesial occlusion with a shift of the lower jaw forward or to the side can sometimes be eliminated during the eruption of the first permanent molars and a physiological increase in occlusion, which helps to reduce the back incisal overlap. At this age (6-7 years), massage of the anterior portion of the alveolar process of the upper jaw from its palatine side is effective. After the lower temporary central incisors have fallen out, it is advisable to grind the cutting edges of the lateral incisors and tubercles of the canines to eliminate the reverse incisal overlap. Massage should be continued during teething of the upper central incisors.

Mechanically acting devices are also used - plates with traction springs under the front teeth of the upper jaw, plates with a sectoral cut and a screw for lengthening the upper dentition, as well as apparatuses of combined action - devices of O.M. Basharova (in a late shift bite).

During the change of lateral teeth, it is recommended to use activators of such structures as the Andresen-Goiplya monoblock, the Klammt open activator, the clasp Frenkel activator, and the Persina apparatus.

Permanent Bite Treatment

Of the removable equipment for the treatment of mesial occlusion in a permanent bite, the devices of O.M. Basharova are most often used, and of non-removable equipment - bracket systems.

Test questions.

1. Decipher the term “mesial occlusion”
2. List the factors contributing to the formation of mesial occlusion
3. Describe the various forms of mesial occlusion.
4. Describe the clinic of the true (gnathic) form of mesial occlusion
5. Set out the clinic of false mesial occlusion

6. Describe the extent (1,2,3) of mesial occlusion
7. For what purpose is the TRG of the head carried out and in what projection?
8. What are the features of the treatment of mesial occlusion during the period of temporary teeth?
9. What type of regulator of Frenkel function is used to treat mesial occlusion and at what age?
10. Describe the design of Basharova's apparatus used to treat mesial occlusion, indicate age indications.
11. Describe methods for treating mesial occlusion in a permanent bite