The theme of the class № 13

Comprehensive treatment of patients with deep bite

The content of the topic:

Deep bite treatment is the most effective in the period of eruption of temporary teeth, the 1^{st} permanent molars, temporary incisors replacement with permanent ones, 2^{nd} permanent molars eruption.

The treatment of malocclusions in vertical plane it is advisable in stages of physiological occlusion height elevation.

There are singled out 4 stages of the physiological elevation of occlusion height:

- the 1st falls on 2-2.5 years, i.e. the moment of all temporary teeth emption completion;

- the 2nd is marked at the age of 6 years, i.e. the time of 1st permanent molars emption;

- the 3rd – 12-13 years, after the complete replacement of temporary teeth with permanent, due to the vertical growth of the alveolar process, full value eruption and regular reciprocal arrangement of second permanent molars and canines;

- the 4th –18-25 years, i.e. as a result of the emption and regular articulation of the 3rd molars; if they are absent, occlusion height elevation occurs at the expense of dento-alveolar lengthening. At all stages, as occlusion height increases dynamically the frontal overbite depth decreases, and dentitions correlation becomes orthognathic.

The main task of treatment:

- elimination of the reasons that leads dento-alveolar lengthening in the region of lateral teeth, disjoining them;

- decrees of dento-alveolar lengthening in the region of frontal teeth;

- correction of the dental arches from, individual teeth and their groups position;

- normalization of the lower jaw position and jaw growth.

Disorders are eliminated in different ways, by means of different methods taking into account their reasons, the period of occlusion formation, its correspondence to the patient's age and sex.

In the period of milk occlusion it is recommended to habituate children to hard food mastication (raw vegetables, fruit, hard bread, etc.) in order to stimulate the normal development of jaws, alveolar processes and dental arches.

In case of carious destruction of the temporary molars crowns they should be restored, which is achieved with the help of fillings, restorative crowns.

If children have pernicious habits (sucking fingers, lips, different objects, pulling cheeks into the oral cavity and biting them with lateral teeth), it is difficult to break them of the habits. Vestibular plates are used for the purpose.

If the tongue frenulum is attached irregularly, frenulum plastic surgery is conducted.

Correct tongue functioning prevents the development of dental arches and jaws disorders, promotes overbite depth normalization.

Prematurely lost temporary molars are subject to replacement with removable dentures with the purpose of deep bite prophylaxis. Occlusion may be heightened on artificial lateral teeth, having provided the contact of the lower frontal teeth cutting edges with the upper jaw prosthesis biting platform.

At the formation and development of sagittal occlusion anomalies a vestibular plate with a biting platform for incisors, used during sleep, should be recommended, and curative gymnastics for the function normalization of the muscles surrounding the dental arches and carriage improvement. Preorthodontic trainers usage may be started.

In the final period of temporary occlusion and in the early period of transitional dentition, i.e. from 5.5 to 9 years, active orthodontic treatment is to be begun. Lateral teeth disjoining in this period at 1st permanent molars eruption promotes dento-alveolar lengthening till the contact with the opposing teeth, in which connection overbite depth decreases. At deep overbite a removable device for the upper jaw with an inclined or biting plane for lower frontal teeth rest, clasps or other fixing appliances may be used. The thickening in its anterior part, which is to disjoin the lateral teeth, is by 2 mm higher than the rest position. The device is fixed with clasps, vestibular arches, and other appliances.

Functionally directing elements for deep bite correction

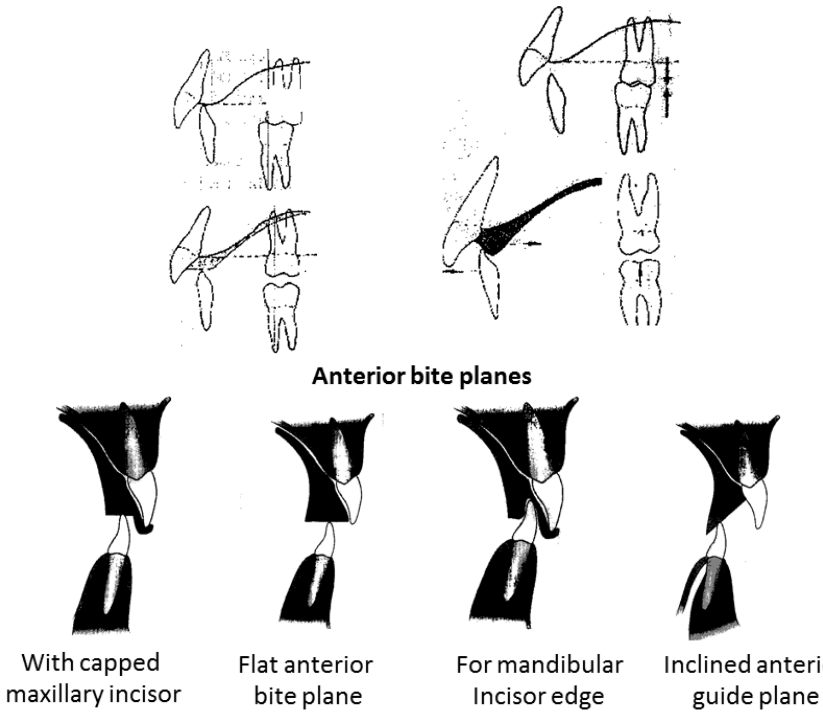
1. Flat anterior bite planet-

- A thickening of the acrylic base plate behind till the canine such that the lower anterior teeth extending usually till the canine such that the lower anterior may bite on it;
- The extension should be flat and parallel to the occlusal plane.
- The bite plane should high enough to disocclude the posterior teeth by about 2-3mm.
- It reduces deep bite by separating the molars allowing them to over-erupt and so decreasing the over bite.
- It can be used to free cuspal interferences to correct posterior crossbites of single teeth.

2. Inclined anterior bite plane

- It is modification of the anterior bite plane used in case where there is severe retroclination of lower anterior teeth with increased overjet.

- The plane is inclined so that the lower anterior is proclined as it contacts the slopping bite plane. The lower incisions engage the bite plane when the patient closes the mouth and mandible is guided to be held in the forward position;
- It correct deep bite and increased overjet by allowing molars to over-erupt and proclining lower incisors.



For the elimination of lower jaw displacement forward or to the side, the inclined plane is made not smooth, but with imprints of the opposite incisors' edges and canine teeth tubercles – the biting platform. In case of dental arch narrowing, the absence of physiological spacing with permanent ones a dilating screw or spring may be fixed to the described device.

For the treatment of distal deep overbite Andresen-Haupl's activator, Muelleman's propulsor, Baiters' bionator, open activator, etc. are used. Orthodontic appliances are used for the purpose of using them both during sleep and during the day. They also include Katz' biting plate.

Propulsor of Meuleman. Propulsor (pusher) Moleman (Muhleman) refers to a functionally active vestibular-oral. It is used to treat deep distal occlusion with protrusion of upper anterior teeth and the presence of between three and slight narrowing of the upper jaw. In the apparatus the combined elements of the vestibular plate and activator Andresen-Couple: in the upper jaw, its borders like the vestibular lamina, and in the lower jaw – to the activator. Both parts are connected with plastic material which is located between the dentition in the frontal portion.

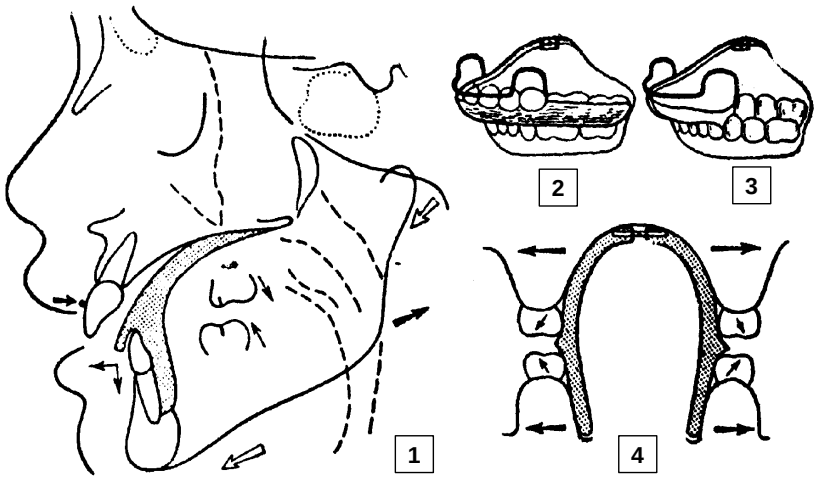
Propulsor Moleman holds the lower jaw in the extended position (to neutral ratio of the first permanent molars) and disjoint the occlusion in the area of lateral

teeth. Valid and greater extension of the lower jaw position forward (over), that enhances the action of the muscles, which shift the jaw posteriorly. The pressure transmitted through the device on the lower jaw, facilitate its growth, and the effect on the upper front teeth – contributing to their retrusion. The vestibular shield pushes the cheeks, isolates the pressure on the lateral areas of the maxilla. Due to the separation of the lateral teeth observed elongation, which helps reduce the depth of incisal overlap. In case of early loss of deciduous molars, the dentition defects replace with a plastic, which prevents the displacement of the teeth in the direction of the defect. Propulsor prevents mouth breathing, helps to wean the child from bad habits sucking tongue, lips, fingers or other objects.

Andresen–Haupl's activator.

During deep overbite treatment attention is paid to the tongue position, because of space reduction in the oral cavity, usually takes a low, posterior position and lies flat between the lateral teeth. As a result of achieving lower jaw displacement with the help of removable dentures with the purpose of deep overbite prophylaxis, the tongue rises up to the palate, its form changes, as the agent causing its irregular position is eliminated. Lateral shields of function regulator hamper cheeks suction and drawing in.

At deep overbite the frontward growth of the dental arch apical basis and vertical growth of the lateral teeth are hampered. Labial bamper stimulate lower jaw growth: lateral teeth disjoining create conditions for alveolar lengthening. At upper and lower dental arches underdevelopment in the anterior part the function regulator FR-I is supplemented with labial bamper for drawing the upper and lower lips aside. In the final treatment phase the middle part of the lingual arch is pressed to the dental tubercles of the lower frontal teeth to prevent their dento-alveolar lengthening. In case of upper incisors retrusion there is conducted plastic surgery for the upper jaw with a screw, resting against the palatine surface of vestibularly located teeth; sector saw cut, biting platform and numerous clasps or a plate with inhibitory springs, palatine arches.



For the treatment of mesial deep overbite orthodontic appliances are chosen depending on pathology varieties.

In the final period of transitional dentition and initial period of permanent occlusion, i.e. at the age of 9-12 years, there is used the physiological elevation of occlusion at the establishment of premolars, canine teeth and 2nd permanent molars. There are used the same orthodontic appliances as in the previous period, and also fixed

orthodontic appliances, for example, Angle's device, bracket system.

In the period of permanent occlusion, at more than 12 years old, to eliminate the most evident dento-gnathic anomalies, combined with deep overbite, it is recommended to use intraoral vestibular arch orthodontic appliances with inter-maxillary recoil (Angle's, Johnson's, Begg's devices, bracket systems, etc.). These appliances are used, as in the previous period, in combination with a removable plate for the upper jaw with a biting platform. For dento-alveolar lengthening rings with hooks, buttons or other devices for vertical interdental recoil applying are fixed on the transferred premolars and molars. With the purpose of dento-alveolar lengthening in the region of the upper lateral teeth it is possible to use an extra-coronal vestibular arch in combination with oblique extra-oral recoil. Low location of hooks on the hat in comparison with the hooks on the ends of the facial arch or the change of the inclination of the facial arch ends in comparison with the extra-coronal arch ends increases vertical teeth transfer.

For dento-alveolar shortening in the anterior part of the upper dental arch and dento-gnathic lengthening in its lateral parts Luri's apparatus modifications are used. The device is made of orthodontic wire 1-1.2 mm in diameter. Rod-like bends are made behind the canine teeth by means of raising the middle part to the level of the incisors roots middle. Then a small vestibular U-arch is bent of steel wire 0.7-0.8 mm in diameter. Its middle part is adjacent to incisors, springs are made on ascending parts. Small arch ends are welded to the arch at the level of the lateral incisors distal surface. Rings with keyhole arrangements are fixed on the 1st premolars for better fixation of the extra-coronal arch. The small arch is used either for dento-alveolar shortening or for the shortening in the region of incisors.

During the treatment of adults myotatic reflexes should be rebuilt, bruxism and other parafunctions are to be eliminated; one must watch the regular closure of dental arches at different types of occlusion, selectively regrind individual teeth tubercles. Such measures are resorted to as preliminary ones before orthodontic treatment and dento-gnathic prosthetics.

If some teeth are absent, especially lateral ones, dental prosthetics is obligatory after orthodontic treatment.

In the process of treating deep overbite one tries to obtain numerous contacts between the dental arches. If the treatment is begun in the period of transitional dentition or temporary occlusion, the child is to be observed by an orthodontist till the end of permanent occlusion formation. Unrepaired functional disorders promote anomaly recurrence.

Orthodontic treatment duration depends on the period of occlusion formation, degree of deep overbite manifestation and concomitant diseases, deformations of teeth, dental arches, occlusion, and general disturbances of organism development.

Treatment prognosis is favorable if the treatment is conducted in the initial

period of transitional dentition or permanent occlusion, if in the process of treatment not only morphological, but also functional disorders are eliminated and deep overbite is not a family feature.

Retention duration after orthodontic treatment is finished depending on the period of occlusion formation, application of functional or mechanical treatment methods, presence of unrepaired functional disorders and obtained treatment results. After achieving numerous contacts between dental arches with the help of an activator, bionator, function regulator, and other functionally acting devices no retention period is needed. If the treatment was conducted with mechanically acting devices and function disorders are not completely eliminated, retention devices are to be used, being chosen subject to possible teeth displacement. Devices application duration is individual, on average it equals the period of active orthodontic treatment.