The theme of the class № 18

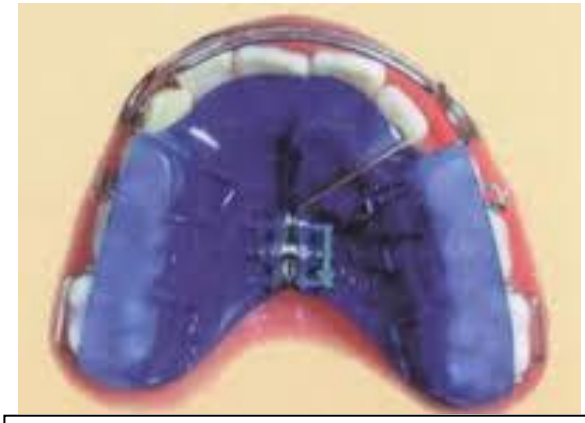
Comprehensive treatment of patients with cross bite

The content of the topic:

Cross bite treatment depends on the pathology variety, reasons for its development, the degree of manifestation, the patient's age.

In the periods of temporary and early transitional dentition periods the treatment consists in the elimination of etiological agents, which have caused the anomaly:

- fight against pernicious habits and oral breathing;
- extraction of retained milk teeth;
- regrinding of the tubercles of milk molars and canine teeth, which have not worn out and hamper lower jaw transversal movements;
- children are recommended to chew hard food on both sides of jaws;
- myogymnastics is administered in cases of considerable lateral lower jaw displacement;
- oral cavity sanation for regular mastication of food on both sides;
- after premature loss of milk molars removable dentures are made to replace dental arches defects (artificial teeth should not have evident tubercles).
- normalization of dental arches form.



Upper jaw appliance for asymmetric expansion with occlusion bite planes and screw

Principles of cross bite treatment without displacement:

-disjoint the occlusion (bite plane);

-normalization of dental arches form (screws, springs, wires).

Removable dentures for the upper jaw are made with a biting platform in the anterior part. Occlusion is elevated on artificial teeth, which allows disjoining teeth on the anomaly developed side. This facilitates correcting their position with the help of springs, screws, an inclined plane, and other appliances.

Except for prophylactic measures, orthodontic devices are used. By indications occlusion is elevated with the help of crowns or gum shields, fixed on

temporary molars, which allows creating conditions for the normalization of dental arches and jaws growth and development, and also eliminating lower jaw displacement. At lateral lower jaw displacement crowns or gum shields are designed taking into consideration its correct position. A chin cup is recommended for the normalization of lower jaw position, which is achieved with the help of a stronger pull on the side opposite to the displacement. To set the lower jaw in correct position plates or gum shields for the upper or lower jaw with an inclined plane in the lateral part are used.

To make appliances for the treatment of cross bite constructive occlusion is found: the dental arches are disjoined on the side of deformation to facilitate their dilation or narrowing, the lower jaw is set in correct position at its lateral displacement.

To treat the cross bite combined with lower jaw lateral displacement there is designed an inclined plane or a device: for the upper jaw – palatine, for the lower jaw – vestibular, on the side opposite to displacement. The *inclined plane* may also be made on the side of lower jaw displacement: on the upper plate – form the vestibular side. In most known devices orthodontic screws are used.

At bilateral cross bite there is used an expansion appliance with occlusive bite planes on the lateral teeth without imprints of the opposing teeth, which facilitates dental arch expansion. At considerable narrowing of the upper dental arch, unilateral or bilateral, dilating devices with a screw or springs are recommended, and also devices with biting platforms in the lateral parts.

The treatment aims at:

- setting the lower jaw in correct position;
- disjoining lateral teeth, which facilitates upper dental arch dilation;
- correcting occlusion;
- rearrangement of myotatic reflex, changing mastication muscles tone;
- normalizing lower jaw articular heads position in TMJ.

At the most evident occlusion anomaly, including the one combined with sagittal and vertical anomalies at the age of 5.5-6 years, functionally directing or functionally acting orthodontic devices are used.

The most often used functionally directing device is activator. At the unilateral inadequacy of lateral teeth position (upper dental arch narrowing, lower dental arch dilation) Andresen-Haupl's activator is added with devices for lateral teeth transfer (springs, screws, levers, etc.).

Cross elastics

Occlusive side plates are preserved on the side of correctly formed occlusion. Occlusion normalizes as a result of teeth position correction, articular process and lower jaw branch growth, jaw dislocation replacement. An activator with a unilateral (on the side of correct dental arches closure) or bilateral sublingual bandage may be used. In the latter case it should not be adjacent to the teeth, which are to be inclined lingually with the help of a vestibular arch.

The most often used functionally acting device is Frankel's function regulator. Treatment with this device is the most effective in the final period of temporary occlusion and in the initial period of transitional dentition. At buccal cross bite the regulator is set in such a way that lateral shields are adjacent to the crowns and alveolar process of the lower jaw and do not touch them in the region of the upper jaw on one side at unilateral cross bite or on both sides at bilateral one; at lingual cross bite lateral shields and dento-alveolar parts correlation must be reverse.

In the final period of transitional dentition and initial period of permanent occlusion prophylactic and .treatment measures are the same as in the previous period. Different methods of orthodontic treatment stimulation (vibration, vacuum therapy, MRT) significantly improve the results and shorten the period of treatment.

In the period of permanent occlusion individual teeth position, dental arches form, and lower jaw displacement may be corrected. Mechanically acting devices are more often used, in combination with inter-maxillary pull, individual teeth extraction, methods of orthodontic treatment stimulation, and also different types of surgical procedures. To transfer upper and lower teeth in opposite directions after occlusion disjoining with the help of a removable device rings on lower and upper teeth with inter-maxillary pull are used. At the treatment **of buccal cross bite rubber elastics** are fastened by the hooks, soldered from the oral side of the rings, and by

the hooks, located from the vestibular side of the rings fixed on the lower lateral teeth. The dental arches are subject to disjoining in these parts.

If the patient cannot set the lower jaw in correct position without assistance, the doctor does this during finding the constructive occlusion.

Sometimes Angle's devices are used. The distance between the vestibular surfaces of transferred teeth may also be regulated with elastic. To treat the cross bite with lateral lower jaw displacement or combine with sagittal or vertical occlusion anomalies Angle's devices with inter-maxillary recoil are used. Modern treatment methods – bracket system with inter-maxillary recoil – are resorted to as well.

In cases of the most evident cross bite, combined with face deformation, surgical treatment is used, whose method is chosen taking into account cross bite varieties, the degree of jaw parts sizes disorder and etiology.

Surgical treatment is combined with preliminary or subsequent orthodontic treatment by indications. The obtained results are not infrequently fixed by means of tooth replacement, which in some cases may be the way of obtaining numerous contacts between the dental arches. During prosthetics attention must be paid to the position of the lower jaw relative to the median-sagittal plane of face. Lower jaw irregular position fixation increases face asymmetry, provokes uneasiness, symptoms of arthropathy (crunch, clicking, pain in TMJ).

Nord appliance for palatal suture fracture

During cross bite treatment the following errors are made most often:

- the dental arch is dilated or narrowed on the side of cross bite without sufficient teeth transfer;

- lower jaw displacement is not eliminated at dento-alveolar cross bite.

Orthodontic treatment duration depends on the possibility of eliminating the etiological agents, which cause anomaly development.

In the period of temporary occlusion there are eliminated the obstacles conditioning lower jaw displacement; not infrequently it is enough to set it in the

correct position (regrind the tubercles of individual teeth or high filling, replace absent teeth by means of prosthetics).

Treatment Prognosis

At a most evident occlusion anomaly the orthodontic treatment, begun in the initial period of transitional dentition, not infrequently finishes in the period of permanent occlusion after obtaining numerous contacts between the dental arches, setting the lower jaw in the correct position, and normalizing dento-gnathic apparatus functioning.

Dento-alveolar forms of cross bite in adults may be eliminated by means of orthodontic treatment and subsequent teeth replacement.

At most evident gnathic forms surgical treatment is resorted to.

Treatment prognosis is favorable after early elimination of the dento-alveolar forms of cross bite, including the ones combined with lower jaw displacement. This anomaly may be eliminated in adults and teenagers, but face asymmetry is preserved more often than in children, and it might increase after teeth loss. At the gnathic form of cross bite prognosis is more favorable at early orthodontic treatment. At older age at the most evident occlusion and face symmetry violation the anomaly may be eliminated only by means of surgical intervention.

Retention period duration depends on the cross bite variety and the period of dento-gnathic apparatus formation. After eliminating the dento-alveolar form of cross bite, obtaining numerous contacts between the dental arches and correct position of the lower jaw in the quiescence the retention period is required.

If there are disorders in the TMJ, the retention period is prolonged. After correcting the gnathic form of cross bite in the retention period the treatment is not infrequently finished with teeth replacement.