

Vertical malocclusion. Deep bite. Etiology, pathogenesis, prevention

The content of the topic:

Deep bite is referred to vertical occlusion anomalies. Its frequency comprises from 20 to 38%. Deep bite is characterized by different terms: "traumatic occlusion", "deep frontal or incisors overbite".

The term "descending occlusion" reflects a dynamic progressive process, at which the incisors of one jaw lose support on the dental tubercles of the teeth-antagonists and glide to the gingival margin.

The term "traumatic occlusion" testifies to the fact that the frontal teeth of one jaw at dental arches closure bear against the mucous tunic of the gums or alveolar process of the opposite side.

Deep bite is such a form of closure, at which the cutting edges of the lower frontal teeth are settled on the clivus of the dental tubercles of similar teeth. If the lower frontal teeth get over the tuberculum dentale of the upper teeth, deep bite forms.

Deep bite is the initial form of pathological occlusion formation.

According to Angle's classification, deep bite is referred to the 1st class – "deviation from the norm in the frontal part while jaws location is in mesiodistal harmony".

According to Betelrnan's occlusions classification deep bite is a pathological occlusion belonging to vertical anomalies.

A.Y. Katz includes deep bite to the 1st group – the deformation is localized in the frontal part, "functional pathology declares itself by considerable predominance of articulation movements of the lower jaw, insufficiency of all mastication muscles".

Deep bite may be viewed as supraocclusion of the frontal teeth and infraocclusion of the lateral teeth (according to Betelrnan's classification of individual teeth position anomalies and Angle's classification of individual teeth position anomalies).

Covering occlusion may be of two types:

- 1) narrow – with vestibular location of the 2nd upper incisors;
- 2) wide – with regular location of the upper frontal teeth in the dental arch, but with different inclination in the lingual direction.

D.A. Kalvelis viewed deep bite as: - covering (opisthognathic); - combined with prognathism (roof-shaped). F.Y. Khoroshilkina divides deep bite into three degrees of deep overbite, which are detected by the height of the central incisors crowns:

- the 1st – from 1/3 to 2/3 of their height;
- the 2nd – from 2/3 to 3/3;
- the 3rd – more than crowns height.

Besides, the author evaluates the three degrees of deep overbite in millimeters:

- the 1st – less than 5 mm;
- the 2nd – from 6 to 9 mm;

- the 3rd – more than 9 mm.

L.V. Ilyina-Markosian singles out:

A. deep bite without lower jaw displacement;

B. deep bite with lower jaw displacement;

C. combined type.

In group A, in its turn, there are differentiated general deep bite and frontal deep overbite. General deep overbite is characterized by dento-gnathic lengthening in the anterior part of both jaws. There is dento-gnathic shortening in the region of lateral teeth. Frontal deep overbite differs from general deep overbite by the absence of changes in the region of lateral teeth.

According to the WHO classification deep bite is referred to dental arches correlation anomalies:

A) excessive overbite;

B) excessive covering occlusion.

Golovko N.V. with splat. proposed working scheme for clinical forms of deep bite:

1 form – dento-alveolar elongation in the anterior maxilla part;

2 form – dento-alveolar elongation in the anterior mandible part;

3 form – dento-alveolar elongation in the anterior upper and lower jaws;

4 form – dento-alveolar shortening in the lateral parts of jaws;

5 form – dento-alveolar elongation in the anterior maxilla in combination with dento-alveolar shortened in the lateral portions;

6 form – dento-alveolar elongation in the anterior mandible in combination with dento-alveolar shortening in the lateral portions;

7 form – dento-alveolar lengthening in the frontal portion of both jaws, in combination with dento-alveolar shortening in the lateral portions.

Thus, deep bite is such a dental arches correlation in the frontal parts of the upper and lower jaws, at which the upper central incisors cover the lower ones by more than 1/3 of the tooth crown at the absence of cutting-tubercular contact.

Deep bite formation is conditioned by:

- heredity;

- different prenatal pathologies (toxicosis of pregnancy, injuries, infectious diseases during pregnancy, avitaminosis, etc.);

- infancy diseases;

- incorrect artificial feeding, which leads to the predominance of the muscles amplifying the lower jaw over the muscles protruding the lower jaw;

- considerable break in the terms of upper and lower incisors coming out;

- inter-maxillary bones overgrowth;

- carious or no carious affection of the lateral teeth hard tissues, including their inhomogeneous wearing out;

- premature loss of temporary molars, 1st permanent molars or 2nd lateral teeth;

- pernicious habits – sucking and biting fingers, different objects provoke frontal teeth deviation, violation of proximal contacts and contacts with opposing teeth, which leads to the decrease of occlusion height, 1st permanent molars

establishment at irregular occlusion level and alveolar processes underdevelopment in the lateral parts. Violation of contacts between frontal teeth conditions dentognathic lengthening in this part;

- changes of the frontal teeth location, their support loss, which causes dentognathic lengthening;

- the same results may be caused by one dental arch enlargement at the presence of a supplemental tooth, diastems, temporary retained molars, at individual macrodontia or dental arch decrease at retention or adentia of individual teeth (more often of the 2nd premolars), microdontia on one jaw, violation of the sequence of upper and lower teeth transitional dentition or the terms of permanent teeth eruption.

Vertical alveolar processes growth violation causes other pathologic occlusions (mesial, distal, cross), which complicate deep overbite and lead to a combined pathology.