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SECONDARY DEFORMATIONS OF TEETH AND JAWS ARISING FROM PARTIAL ABSENCE OF TEETH AND THEIR ORTHOPEDIC TREATMENT.

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Abstract: Secondary deformations of dental arches can be observed both with preserved dental arches in cases of multiple carious lesions of the occlusal surfaces of teeth, anatomically incorrect restoration of the occlusal surfaces of the crowns of chewing teeth or their contact surfaces after filling, and with partial loss of teeth in all age groups. With preserved dental arches, secondary deformations are more common in young people aged 18-25 years, and can also appear in children with untimely removal of baby teeth, caries, bad habits and other causes.

Key words:dental arches, dental arch defects, secondary deformations.

The dental arch is a single whole, as it includes the alveolar process, in which the roots of the teeth are located, and the existing contacts between the teeth. When one or more teeth are lost, a defect in the dental row occurs, and the unity of the dental arch is disrupted, as a result of which new conditions are created for the functional activity of the masticatory apparatus. The physiological balance of the masticatory apparatus as the stability of the form and function of the dental system, masticatory muscles and soft tissues is under the constant influence of morphological, physiological, constitutional, endocrine, social and everyday influences of the environment. Secondary deformations as complications after tooth extraction can occur at any age.

The most common risk factors for tooth loss are caries and its complications (pulpitis, periodontitis), periodontal diseases, tumors, and often injuries due to accidents. With the development of secondary deformations of the dentition against the background of anomalies of the dentoalveolar system, the pathological symptoms characteristic of anomalies and deformations with partial tooth loss are summarized. Interventions to remove individual teeth are accompanied by persistent morphofunctional disorders in the dentoalveolar system, which are characterized by the displacement of individual teeth in different directions, atrophic or hypertrophic processes in the bone tissue of the alveolar processes. Bone structure disorders are noted not only in the area of the removed teeth, but also in the area of their antagonists and even in the area of the intact teeth on the opposite side of the jaw, which makes the problem of treating this pathology one of the most urgent. Data on the prevalence of pathology vary significantly, which is due not only to the duration of observations, but also to many other physiological and social factors. The occurrence of deformations after tooth extraction is observed in 20.75% of patients, in older age groups they occur in 78.6%, and in unilateral terminal defects in 97.3% of individuals they are accompanied by secondary deformations.

Secondary deformations are manifested by the movement of teeth towards the defect, vertical movement of teeth (the Popov-Godon phenomenon, when a tooth deprived of antagonists vertically moves into a defect in the dentition, the distance between its occlusal surface and the alveolar process of the edentulous area of the opposite jaw decreases, or the tooth touches the

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mucous membrane, tilting of teeth towards the lingual, palatal or buccal side), rotation around the axis, fan-shaped divergence of teeth in periodontitis. Horizontal secondary deformations occur after the loss of one or more adjacent teeth, and are detected when the position of the teeth limiting the defect changes. The severity of the deformation directly depends on such factors as the patient's age, the time elapsed since tooth extraction, the type of occlusion, and the condition of the periodontal tissues. Secondary deformations, complicating the clinical picture of partial tooth loss, complicate the choice and implementation of orthopedic treatment, and in some cases make it impossible. Pathological changes occurring in the formed bite due to defects in the dental arches are characterized by the fact that the interdependence between form and function is disrupted. It has been revealed that with distally unlimited defects this system is qualitatively changed, which is confirmed by the disruption of calcium salt metabolism, which is generalized and directly dependent on the time elapsed since the loss of teeth and the nature of functional changes. The loss of lateral teeth in the absence of antagonists leads to deformations of not only the dental arches, but also the bite. One of such deformations is the deformation of the bite with a posterior shift of the lower jaw. One of the forms of decreasing bite occurs. The developed stage of decreasing bite is characterized by localization of the pathological process within the dental arches and its transition to the temporomandibular joint. This pathology requires long-term orthodontic and then orthopedic treatment.

After early extraction of baby teeth, adjacent teeth tilt and tend to move towards the missing tooth. At the same time, the dental arch shortens and often narrows. Due to premature extraction of baby teeth, there may also be a delay in the eruption of permanent teeth or their early eruption, a change in the location of the rudiments of permanent teeth. All this leads to deformation of the dental arches. Today, there are several classifications of secondary deformations of the dental arches.

One of them is built on the morphological principle and includes six groups:

1. Includes dental arches, the deformation of which occurred due to vertical alveolar elongation of the upper teeth (unilateral or bilateral).
2. Deformation due to vertical alveolar elongation of the lower teeth.
3. Deformation due to mutual vertical dental alveolar elongation of the upper and lower jaws.
4. Deformation with sagittal displacement of teeth (medial and distal). 5. Dental arches with lingual, palatal or buccal displacement of teeth.
6. Deformation that occurs due to a combined displacement of teeth (fan-shaped divergence of teeth, rotation and tilt).

When studying dental and jaw deformations and clinical manifestations of the Popov-Godon phenomenon, 2 main forms of pathology were identified: the first form - simultaneously with the displacement of the tooth, a visible increase in the alveolar process is noted without bone tissue resorption, exposure of the tooth root and formation of a periodontal pocket. The second form - tooth displacement is accompanied by periodontal tissue atrophy and exposure of the root cementum. Visible increase in the alveolar process with insignificant (within 1/4) periodontal resorption; no increase in the alveolar process is noted, periodontal tissue resorption is revealed at the level of half or more. In this case, the following possible directions of tooth displacement are distinguished: vertical, medial inclination, distal inclination, inclination in the oral direction, inclination in the vestibular direction, combined displacement.

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Normally, chewing pressure is redistributed over the entire dental arch. As soon as a dental arch defect occurs, conditions are created that disrupt the normal distribution of chewing pressure, ultimately leading to traumatic overload of individual groups of teeth and the occurrence of a traumatic node . It is observed in the decompensated state of the affected dentoalveolar system. It can be single or multiple, located on one or both dental arches. It can develop not only as a result of tooth loss, but also with dental and bite anomalies, approximal caries, improperly applied filling, production of an artificial crown increasing the bite, uneven tooth wear and, as a rule, periodontosis, when the intra-alveolar part of a tooth or several teeth is shortened as a result of alveolar process atrophy. A reflected traumatic node is characterized by a pathological condition in the area of the frontal teeth, caused by changes occurring in both groups of chewing teeth. When chewing teeth are lost, all pressure is transferred to the area of the front teeth. But at the same time, they must perform not only the function of chewing food, but also the function of chewing. Symptoms in the area of the front teeth are pathological abrasion, leading to a decrease in bite. With severe damage - speech impairment, Costen's syndrome.

The main cause of pathological processes in the temporomandibular joint is a decrease in bite. Secondary deformations cause an adaptive compensatory reaction from the TMJ tissues. Clinically - arthropathy (crunching, clicking or pain in one or both joints during chewing or talking, sometimes there is a limitation in opening the mouth, hearing loss, congestion in the ears, dull pain in the ear radiating to the parietal and occipital regions). In order to normalize the occlusal surface and create the correct occlusal relationships for subsequent prosthetics, the following are used: the method of selective grinding of tubercles; orthodontic treatment; hardware-surgical method - a combination of sequential deocclusion with preliminary corticotomy; surgical method - removal of displaced teeth.

Dental rows are a unity of chewing organs of teeth, acting in cooperation. A tooth can function normally only in a dental arch, which in turn plays a full role only with its continuity. Removal of even one tooth disrupts the normal distribution of chewing pressure, and individual teeth fall into overload conditions. In this case, chewing pressure from a factor stimulating metabolic processes in the periodontium turns into its opposite - a factor of destruction. Deformations of the dentoalveolar system usually increase, their treatment becomes long-term and usually requires the use of various orthodontic devices and surgical interventions. Therefore, at present, no one doubts the importance and necessity of early detection and treatment of dentoalveolar anomalies and deformations, and this is possible only with dispensary observation of children by a dentist.

Modern devices, elastopositioners of various designs, are effective for the prevention of secondary deformations of the dentition in children during the period of early mixed dentition. Timely pre-orthodontic correction of myofunctional disorders in children with the help of early orthodontic treatment using individually selected standard elastopositioners and myogymnastics allows normalizing the occlusion of the dentition, restoring the function of the masticatory apparatus, and optimizing the formation of the dentoalveolar system during the growth and development of the child.

Thus, secondary deformations of the dental arches are a common pathology leading to disruption of the entire dental system, which requires rational complex treatment. More and more often, orthodontic treatment precedes orthopedic treatment, allowing in many cases to avoid the removal or grinding of displaced teeth.

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