

MEDICAL SCIENCES

METHODS FOR PREVENTING THE OCCURRENCE OF SECONDARY DEFORMATIONS OF THE DENTITION

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Abstract

Secondary deformations of the dentition can be observed both with preserved dentition 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 dentition, secondary deformations are more common in young people aged 18-25 years; they can also appear in children with untimely removal of baby teeth, caries, bad habits, etc. Key words: dentition, defects, secondary deformations.

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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 dentition occurs, and the unity of the dental arch is disrupted, resulting in the creation of new conditions for the functional activity of the masticatory apparatus [1]. Secondary deformations as complications after tooth extraction can occur at any age [2,14,16]. Risk factors for tooth loss are most often caries and its complications (pulpitis, periodontitis), periodontal disease, tumors, and often trauma due to accidents [7,16]. 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 loss of teeth are summarized [11]. Interventions for the removal of individual teeth are accompanied by persistent morpho-functional disorders in the dental system, which are characterized by displacement of individual teeth in different directions, atrophic or hypertrophic processes in the bone tissue of the alveolar processes [1,2,14]. Disturbances in the bone structure are observed not only in the area of extracted teeth, but also in the area of their antagonists and even in the area of intact teeth on the opposite side of the jaw, which makes the problem of treating this pathology one of the most pressing [19]. Data on the prevalence of pathology vary significantly, which is due not only to the timing 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 with unilateral end defects in 97.3% of individuals they are accompanied by secondary deformations [15]. Secondary deformations are manifested by the movement of teeth towards the

defect, vertical movement of teeth (Popov-Godon phenomenon, when a tooth, devoid of antagonists, moves vertically 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 mucous membrane, inclination of teeth to the lingual, palatal or buccal side), rotation around an axis, fan-shaped divergence of teeth during periodontitis [3,4]. 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 factors such as the patient's age, the time elapsed after tooth extraction, the type of bite, 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 [12]. The loss of lateral teeth in the absence of antagonists leads to deformations not only of the dentition, but also of the bite. One of these deformities is a malocclusion with a posterior shift of the lower jaw. A form of declining bite occurs. The developed stage of a declining bite is characterized by the localization of the pathological process within the dentition and its transition to the temporomandibular joint. This pathology requires long-term orthodontic and then orthopedic treatment [6,18]. After the early removal of primary teeth in children, the adjacent teeth tilt in the body and tend to move towards the missing tooth. At the same time, the dentition is shortened and often narrowed. In connection with the premature removal of milk 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 dentition [14]. Today, there are several

classifications of secondary dentition deformations. One of them is built on a morphological principle and includes six groups: 1. Includes dentition, the deformation of which occurred due to the vertical dentoalveolar elongation of the upper teeth (one-sided or two-sided). 2. Deformation due to vertical dentoalveolar elongation of the lower teeth. 3. Deformation due to mutual vertical dentoalveolar elongation of the upper and lower jaws. 4. Deformation with sagittal displacement of teeth (medial and distal). 5. Dentition with lingual, palatal or buccal displacement of teeth. 6. Deformation that arose due to the combined displacement of teeth (fan-shaped divergence of teeth, rotation and inclination) [2,3,13]. When studying dentofacial deformations and clinical manifestations of the Popov-Gordon phenomenon, 2 main forms of pathology were identified: the first form - simultaneously with tooth displacement, there is a visible increase in the alveolar process without bone resorption, exposure of the tooth root and the formation of a periodontal pocket. The second form - tooth displacement is accompanied by the phenomena of atrophy of periodontal tissues and exposure of root cement. Visible increase in the alveolar process with slight (within 1/4) periodontal resorption; There is no increase in the alveolar process; resorption of periodontal tissue is detected at a 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 [4]. Normally, chewing pressure is redistributed over the entire dentition. As soon as a defect in the dentition occurs, conditions are created that disrupt the normal distribution of chewing pressure, ultimately leading to traumatic overload of individual groups of teeth and the emergence of a traumatic node [1,3]. It is observed in a decompensated state of the affected dental system. Can be single or multiple, located on one or both rows of teeth. It can develop not only as a result of tooth loss, but also with anomalies of the teeth and bite, approximal caries, incorrectly applied fillings, the production of an artificial crown that increases the bite, uneven wear of teeth and, as a rule, periodontal disease, when the intra-alveolar part of a tooth or several teeth is shortened as a result of atrophy alveolar process [13]. The reflected traumatic node is characterized by a pathological condition in the area of the anterior teeth, caused by changes occurring in both groups of chewing teeth. When chewing teeth are lost, all the 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 anterior teeth are pathological abrasion, leading to a decrease in bite. With pronounced damage - speech impairment, Costen's syndrome [11]. The main cause of pathological processes in the temporomandibular joint is a decrease in bite. Secondary deformations cause an adaptive compensatory reaction on the part of the TMJ tissues. Clinically – arthropathy (crunching, clicking or pain in one or both joints during chewing or talking, sometimes there is limited mouth opening, decreased hearing, congestion in the ears, dull pain in the ear area,

radiating to the parietal and occipital regions) [1,13]. In order to normalize the occlusal surface and create correct occlusal relationships during subsequent prosthetics, the following is used: the method of selective grinding of the cusps; orthodontic treatment; hardware-surgical method - a combination of sequential disocclusion with preliminary corticotomy; surgical method is removal of displaced teeth [17]. The dentition represents the unity of the chewing organs of the teeth, acting in collaboration. A tooth can function normally only in the dental arch, which in turn plays a full role only if it is continuous. The removal of even one tooth disrupts the normal distribution of chewing pressure, and individual teeth become overloaded. In this case, chewing pressure from a factor stimulating metabolic processes in the periodontium turns into its opposite - a factor of destruction [8]. Deformations of the dental system usually intensify, their treatment becomes lengthy and usually requires the use of various orthodontic appliances and surgical interventions. Therefore, at present, no one doubts the importance and necessity of early detection and treatment of dentoalveolar anomalies and deformities, and this is only possible with dispensary observation of children by a dentist [9]. Modern elastopositioners of various designs are effective for the prevention of secondary deformations of the dentition in children in the period of early mixed dentition. Timely pre-orthodontic correction of myofunctional disorders in children with the help of early orthodontic treatment using individually sized standard elastopositioners and myogymnastics makes it possible to normalize the occlusion of the dentition, restore the function of the masticatory apparatus, and optimize the formation of the dentofacial system in the process of growth and development of the child [10].

Conclusion.

Thus, secondary deformations of the dentition are a common pathology, leading to disruption of the entire dental system, which requires rational comprehensive treatment. Increasingly, orthodontic treatment precedes orthopedic treatment, allowing in many cases to avoid the removal or grinding of displaced teeth.

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