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DENTAL RETENTION IN CHILDREN: CAUSES OF ITS DEVELOPMENT AND METHODS OF COMPREHENSIVE TREATMENT OF THIS PATHOLOGY

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Abstract: Dentofacial anomalies rank second only to dental caries and periodontal disease in the structure of dental diseases. They manifest as developmental disorders of the teeth, dentition, and jawbones and are considered risk factors for dental diseases. Specifically, they contribute to the development of dental caries and periodontal disease. Dental retention can also result from disrupted formation and occlusion of the teeth. According to domestic and international literature, the incidence of patients with this pathology seeking orthodontic care is 10-15.3%.

Keywords:retention of canines, dental system, eruption anomalies.

Retention is caused by local and general factors. Local factors (supernumerary teeth, trauma, lack of space in the dental arch) lead to delayed eruption of individual teeth. General factors (endocrine disorders, etc.) cause delayed eruption of multiple teeth. If the underlying cause is addressed, tooth eruption may complete spontaneously, but if eruption does not occur, persistent retention of permanent teeth develops. This pathology is characterized by the complete development and mineralization of the roots of the impacted teeth, the direction of which does not always coincide with the direction of eruption into the dental arch. A gap with a full-bodied hypertrophied membrane forms around the crown of the tooth, and the periodontal ligament space is clearly visible. If the retention is not corrected, the periodontal ligament space gradually narrows, the tooth becomes encased in bone tissue, and the ability to erupt is significantly reduced. Subsequently, resorption of the impacted teeth is often observed, accompanied by neuralgic pain. In the first stage of retention, eliminating the causative factor is sufficient for spontaneous tooth eruption. With persistent retention, eliminating the causative factor alone is not enough; it is necessary to properly guide the impacted tooth into the dental arch, stimulate spontaneous eruption, or use traction.

The most commonly impacted teeth are canines, central and lateral incisors, and premolars in the maxilla. In the mandible, the first premolars and, very rarely, canines are impacted. Impacted incisors are a common yet understudied dental anomaly. They account for 34.6% of all impacted teeth. The impaction of one or more incisors leads to narrowing and shortening of the dental arch, distorting its shape, which in turn leads to aesthetic, morphological, and functional problems. The aim of this study was to assess the morphological condition of the dental system of patients with impacted incisors, identify the causes, and explore the potential for a comprehensive treatment approach.

A group of patients aged 9 to 14 years with impacted one or more incisors was examined. Standardization of examination methods is of great importance in the diagnosis of dental anomalies. Conventional and specialized examination methods were used to assess dental anomalies. During facial examination, the symmetry of the left and right halves of the face was assessed, and the lower, middle, and upper thirds were compared. The facial profile and position

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of the mandible, which varies with malocclusion, were examined. In the oral cavity, the shape and size of the teeth, their position or absence, were examined, and the period of their development and eruption was determined depending on the type.

Orthopantomograms and plaster casts of the jaws were examined. The inclination angles of the longitudinal axes of the impacted incisors were determined using Zhigurt's method. One straight line was drawn through the incisal edges of the anterior (frontal) teeth, another through the longitudinal axis of the impacted incisor, and the angle formed by these lines was calculated. In addition to the inclination angles of the longitudinal axes, the levels of the impacted teeth in the alveolar process were determined on the orthopantomograms. For this purpose, two horizontal lines were drawn: through the midpoint of the anterior nasal protrusion and through the apex of the interdental septum between the central maxillary incisors (the "prostion" point). The space between these parallel lines was divided into four equal segments, yielding four levels of impacted incisor position in the alveolar process. All patients underwent comprehensive treatment: the first stage was the removal of supernumerary teeth in an outpatient setting under local anesthesia. The second stage involved exposing the crown of the impacted incisor and attaching an orthodontic button or bracket. During the third stage, the orthodontic appliance was secured: 22% of patients during the transition period used removable orthodontic appliances, while 78% of patients with established permanent dentition used fixed orthodontic appliances.

It was established that in the examined patients the cause of incisor retention was supernumerary teeth: 63.5% of patients had 1 supernumerary tooth, 37.5% had 2. Retention of incisors is facilitated by the lack of space in the dentition, characterized by its shortening (by 7.6%) and narrowing in the anterior (by 7.3%) and posterior (by 5.4%) sections due to the absence of a tooth. The stages of root crown formation of impacted teeth (according to T. A. Tochilina) and localization of supernumerary teeth were determined. The inclination of the longitudinal axis of the impacted incisors was established: in 67.7% of patients it was degree I (from 105° to 120°). At the first level of occurrence in the alveolar process, 55.8% of the impacted complete incisors were located; at the second level - 37.6%; at the third level - 13.6%; at the fourth level - 4.0%. Step-by-step complex treatment made it possible to eliminate dental anomalies.

Thus, the most successful and shortest treatment time is for patients whose impacted incisor roots were not fully formed, facilitating their advancement through the bone. The greater the longitudinal axis angle of the impacted incisor and the greater the tooth's position within the alveolar process, the longer the orthodontic treatment lasted.

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