Volume 3, Issue 1, January 2025 ISSN (E): 2938-3765

COMPREHENSIVE DENTAL REHABILITATION OF PATIENTS WITH PATHOLOGICAL ERASURE OF DENTAL HARD TISSUES: WAYS TO INCREASE EFFICIENCY (LITERATURE REVIEW)

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Abstract
The pathological erasure of dental hard tissues is one of the urgent problems of modern dentistry, which is due to the high prevalence of this pathology and its significant impact on the quality of life of patients.

Keywords: Pathological tooth erasure, increased tooth erasure, restorative treatment, dental restoration, occlusive disorders, functional diagnostics, comprehensive rehabilitation.

Introduction

According to epidemiological studies in recent years, the incidence of pathological tooth erasure varies from 11.2% to 42.6% in various age groups, while there is a tendency to increase the number of young patients. The problem of early diagnosis and timely treatment of pathological tooth erasure is of particular importance, since the progression of the process leads to serious morphofunctional disorders of the dental system. The loss of dental hard tissues is accompanied by a decrease in bite height, changes in the temporomandibular joints, dysfunction of the masticatory muscles and aesthetic disorders, which significantly reduces the quality of life of patients and requires comprehensive dental rehabilitation[2].

Modern approaches to the treatment of pathological tooth erasure are based on the interdisciplinary interaction of various dental specialists. However, despite significant progress in the field of restoration materials and technologies, the problem of long-term stability of treatment results remains relevant. According to clinical studies, the incidence of complications and unsatisfactory treatment results can reach 25-30% during the first three years after rehabilitation[4].

One of the key problems is the lack of a unified systematic approach to the diagnosis and choice of treatment tactics for patients with pathological tooth erasure. Existing algorithms do not always take into account the multifactorial etiology of the disease, the individual characteristics of patients

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and the biomechanical aspects of restoration of lost dental tissues. In addition, the issues of predicting treatment outcomes and preventing possible complications have not been sufficiently studied[1].

The development of digital technologies in dentistry opens up new opportunities for the diagnosis and treatment planning of patients with pathological tooth erasure. The introduction of computer modeling systems, CAD/CAM technologies, and digital occlusography makes it possible to increase the accuracy of diagnosis and the predictability of treatment results. However, the potential of modern digital technologies in the comprehensive rehabilitation of patients with this pathology has not been sufficiently studied[3].

Of particular relevance is the development of a personalized approach to the treatment of pathological tooth erasure, taking into account the individual characteristics of the patient, the etiological factors of the disease and the functional state of the dental system. An important aspect is the definition of clear criteria for the selection of methods for restoring lost dental tissues and the sequence of rehabilitation measures[6].

Thus, despite a significant number of studies devoted to the problem of pathological tooth erasure, many aspects of complex dental rehabilitation of this category of patients require further study and improvement. This determines the need to develop new approaches to diagnosis and treatment aimed at improving the effectiveness of dental care and improving long-term rehabilitation outcomes[7].

Basically, the classifications of PSZ are based on the external morphological picture of the pathology, namely, on the depth of damage to the hard tissues of the teeth, depending on the type of bite and the extent of the pathological process relative to the dentition, depending on the compensatory and adaptive response of the maxillary system [8]. Classifications of PSZ in scientific publications are based on etiology (endogenous, exogenous, idiopathic), severity of clinical symptoms (classes 1 to 3), pathogenic activity (explicit, latent), and localization [9].

PSZ can be observed on the teeth of one or both jaws on one or both sides. In clinical practice, there are often cases when teeth are worn much more on one jaw than on the other. Sometimes the teeth of one group are worn out more on the upper jaw, and the teeth of another group on the lower jaw. In some cases, the nature and plane of erasure on all teeth of one or both jaws are of the same type, in others they are completely different [10].

The horizontal shape of the PSZ can be generalized and local. The local form of PSZ is characterized by erasure only in the area of any group of teeth, it is observed both with intact dentition and with partial adentia. The incisors of the upper or lower jaws are most often erased with all types of bite. With this shape and intact dentition, pairs of antagonist teeth with undisturbed hard crown tissues maintain the occlusal height of the lower third of the face. The crowns of worn teeth are reduced in size in accordance with the degree of erasure, while hypertrophy of the alveolar process is observed, the height of the lower third of the face remains, and there are no changes in the TMJ and muscles [3].

The generalized form is characterized by the erasure of all chewing and cutting surfaces of both the front and side teeth. With generalized PSZ, 2 clinical forms are distinguished: compensated (preserved facial height, pronounced dental alveolar elongation and minimal interclusal space); uncompensated (decreased facial height, lack of dental alveolar elongation, increased interclusal

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distance) [11].

PSZ is steadily progressing, becoming deeper in places where the dentin is exposed, and lingers for a while where the enamel is preserved. As a result, there is a change in the anatomical shape of the crowns, the disappearance of the tubercles of the chewing teeth, the cutting edges of the incisors, with the formation of chewing pads, the appearance of abrasion facets and sharp edges on the teeth [12].

The abrasion facets have the appearance of smoothly polished crater-shaped cavities, the edges of which are limited by sharp protrusions of enamel. The formation of crater-shaped cavities is explained by the unequal stiffness of enamel and dentin [13]. The latter is softer and therefore wears off faster. Consequently, with the loss of enamel, abrasion increases.

PSZ is accompanied by the destruction of enamel, the formation of its cracks, macro- and micro-chips. Exposed areas of dentine sometimes retain a smooth, shiny surface, in other cases they serve as retention points for the development of caries [14].

According to the classification of H.A. Kalamkarov [15], the depth of the lesion can be different - I, II and III degrees: I degree - erasure by 1/3 of the length of the crown; II degree - by 2/3 of the length of the crown; III degree - complete erasure of the crown part.

The severity of the clinical signs of the generalized horizontal form of PSZ depends on the degree of lesion, type of bite, size and topography of defects in the dentition. With intact dentition, orthognathic or direct bite, grade I PSZ is accompanied by a slight decrease in interalveolar height, and facial features are absent or barely noticeable [4].

With dental row defects and deep incisor overlap, even with grade I OCD, there is sometimes a pronounced decrease in interalveolar height and characteristic facial features [9]. In severe cases, grade II and III PSZ are usually accompanied by a significant decrease in interalveolar height. At rest, the vertical distance between the upper and lower dentition reaches 15 mm.

A decrease in the interalveolar height and the height of the lower third of the face is often accompanied by parafunction of the masticatory muscles (bruxism) [8,19], lateral and sagittal displacement of the mandible [12]. There is a change in the topographic relationships of the TMJ parts due to the posterior displacement of the mandibular heads [3]. At the same time, the clinical picture becomes so complicated that it is often impossible to establish a cause-and-effect relationship between the four links of the pathogenetic chain - PSZ, periodontal disease, masticatory muscle parafunction, and TMJ dysfunction [15].

Clinical methods of examination of patients with PSZ make it possible to find out the causes of the disease, determine the nature of the disorders, establish a diagnosis and, based on this, determine the scope of comprehensive rehabilitation, in particular, orthopedic treatment [10].

To objectively assess the condition of dental hard tissues, a number of authors use various techniques to express the prevalence and degree of abrasion with a single quantitative indicator that can be used to analyze patient groups and accurately assess the condition of individual patients.

Since there is a decrease in the height of the lower part of the face in PSZ, an important element of the clinical examination is to determine the size of the upper, middle and lower thirds of the face, as well as the occlusal height [4].

An equally important element of the examination of patients with PSZ is the assessment of occlusal

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contacts. For this purpose, occludograms are made that allow for comparative analysis in different age groups, analyze the dynamics of the pathological process at different stages of the disease, and evaluate the occlusal surfaces of dentures after treatment [1].

Conclusions:

Thus, today the modern level of computer technology development (for example, the T-scan device, Tekscan, USA) allows for clinical monitoring of occlusion not only using articulation paper or articulation foil, but also using hardware methods. The use of articulation paper is often insufficient to carry out an adequate diagnosis and competent functionally balanced occlusal correction.

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