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LOCAL ORAL HYGIENE AND QUALITATIVE INDICATORS OF FILLING MATERIALS

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Abstract: This study was conducted to determine the effect of oral hygiene on the quality and long-term durability of restorative materials. As part of the study, 46 patients aged 12–14 years were clinically examined at the Departments of Otorhinolaryngology, Pediatric Otorhinolaryngology, and Stomatology of the Tashkent Pediatric Medical Institute (TashPMI). Observations showed that the high consumption of fermentable carbohydrates leads to the formation of an acid-producing environment in the oral cavity, which leads to a decrease in salivary pH, creating favorable conditions for the proliferation of acid-producing microorganisms, particularly lactobacilli. These factors can accelerate the demineralization process of dental fillings. The results of the study confirmed that improving oral hygiene reduces these negative effects and positively impacts the service life of restorative materials.

Keywords: filling material, local hygiene, hygienic index, caries, microorganism.

Introduction

The frequency of professional oral hygiene among adolescents throughout the year is determined by the condition of the occlusal surfaces of the molars and the level of patient engagement during oral hygiene education. The management of dental caries in children is a long-term and relatively complex process. Currently, dental caries and its clinical assessment remain among the leading problems in pediatric dentistry. The prevalence and intensity of caries in children remain high and continue to increase. Therefore, the evaluation of dental restorations represents an important area of dentistry for the successful development of the dentofacial system in children.

The primary prerequisite for effective treatment of dental caries and its complications is the complete removal of necrotic tissues followed by restoration of the resulting defect. Methods for restoring posterior teeth include direct fillings, indirect inlays, and artificial crowns [1,2].

One of the key criteria for evaluating composite restorations of Class I and II cavities is wear. Clinically, wear is influenced not only by the material properties and operative procedures but also by factors affecting the intraoral environment.

Method

To solve the set tasks, we examined 46 patients aged 12-14 years at the Department of Otorhinolaryngology and Pediatric Dentistry of Tashkent State Medical University, who underwent treatment of 46 teeth with Black Class I and II cavities, and tracked the immediate and long-term results of the restorations. To do this, we analyzed the hygienic condition of the patients' oral cavities at predetermined observation periods (3, 6, and 12 months).

Patients without pronounced somatic pathologies and periodontal diseases were selected for the study. Regardless of the material and filling technique used, the preparation was carried out according to the rules of the adhesive technique.

The hygienic condition of the oral cavity and dental plaque was assessed visually and using the Simplified Oral Hygiene Index (OHI-S) according to J.C. Green. J R. Vermillion (1964).

Results

The results of the clinical evaluation of dental fillings indicate that the reliability and longevity of composite restorations largely depend on the quality of the materials and adhesive systems used, as well as on the condition of dental hard tissues, the intensity of dental caries, the status of periodontal tissues, and the level of oral hygiene. The frequency of marginal adaptation defects at different follow-up periods is presented in **Table 1**.

Frequency of marginal adaptation defects at different observation periods in various nosological forms of caries

Table 1

Observation period	Moderate caries	Deep caries
3 months	–	2
6 months	1	2
12 months	1	1
Total	**2**	**5**

Oral hygiene status in patient groups at follow-up periods of 3, 6, and 12 months

Table 2

Observation period	Good	Satisfactory	Unsatisfactory	Total
3 months	34	9	3	46
6 months	38	7	1	46
12 months	40	6	0	46

As shown in **Table 2**, the highest frequency of marginal adaptation defects was also observed at the 12-month follow-up period.

In terms of their properties, composite materials have long been considered a viable alternative to amalgam and other filling materials. The reliability and durability of composite restorations depend largely on the quality of the materials and adhesive systems applied, as well as on the condition of dental hard tissues, caries activity, periodontal tissue status, and oral hygiene. Although composite materials offer several advantages over amalgam, they have not yet surpassed

amalgam in all characteristics required of restorative materials, as amalgam still demonstrates superior properties such as lower shrinkage, reduced water absorption, and bactericidal effects. Following restoration with composite materials, clinical phenomena such as discoloration of the filling, marginal staining at the tooth–composite interface, marginal adaptation defects, and material wear may occur [3–6].

Overall, the 12-month evaluation of filling quality demonstrated that marginal adaptation defects were most frequently observed in deep cavities (10 cases) and less frequently in moderate cavities (4 cases). Improvement in these parameters was noted after stabilization of a satisfactory oral hygiene status.

Conclusion.

Light-cured composite fillings have high strength and aesthetic qualities, which makes them suitable for restoring chewing surfaces of teeth, especially as a replacement for amalgams and other fillings. Observations show that the degree of wear can be influenced by factors such as an acid-producing intraoral environment caused by high absorption of fermentable carbohydrates, which leads to a decrease in the pH level in saliva, promoting the growth of microorganisms capable of growing in an acidic environment, such as lactobacilli. Studies confirm that improving local oral hygiene affects the durability of filling material and the functional condition of the tooth.

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