



## Contemporary Restorative Treatment of Dental Caries with Preventive Fillings -A Case Report

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**ABSTRACT: Background:** The strength and esthetic properties of the resin-based nanocomposite tested should allow the clinician to use it for both anterior and posterior restorations.

**Case Report:** A child, a boy of 10 years, who complains of severe periodical toothache 36 was brought by his parents for examination and treatment at the University Medical Dental Center of the Faculty of Dental Medicine, Varna, Bulgaria. The child doesn't suffers from systemic diseases. It is directed for pediatric dentistry treatment by a pediatrician from the clinic in Varna, Bulgaria. The treatment was conducted on local anesthesia of the child in the clinic of the University Medical Dental Center at the Faculty of Dental Medicine, Varna, Bulgaria. The study is realized in the Faculty of Dental Medicine - Varna. Study period 2016-2017 years. The study is authorized by the Scientific Research Ethics Commission at Varna Medical University and informed consent of each parent.

**Conclusion:** The operative technique for cavitated lesions of permanent teeth is minimally invasive cavity preparation. The fillings must be of contemporary adhesive restorative dental materials with preventive qualities.

**KEYWORDS:** caries, cavitated lesions, local anesthesia, restorative treatment

### I. INTRODUCTION

The diagnosis of caries disease develops in two main areas - detect the earliest changes in the enamel and the detection of the factors leading to the development process itself [1]. Preventive non-operative treatment at the initial process of caries applies to the first two stages. For the restoration of reversible changes in tooth structure of enamel at initial non-cavitated carious lesions with the possibilities to stimulate the regenerative capacity of the hard dental tissues for remineralization [2]. Despite an overall caries decrease in children, still 50-60% of carious primary teeth of 6-years-old remain untreated. Therefore, early treatment is fundamental [3]. The goal is to treat caries in one visit of the child by applying analgesia with local anesthesia.

The dental nanocomposite system studied showed high translucency, high polishment and polish retention similar to those of microfills while maintaining physical properties and wear resistance equivalent to those of several hybrid composites. Clinical Implications: The strength and esthetic properties of the resin-based nanocomposite tested should allow the clinician to use it for both anterior and posterior restorations [Sumita B. Mitra et al., 2003, 4].

### II. CASE REPORT

A child, a boy of 10 years complains of severe periodic toothache 36 was brought by his parents for examination and treatment at the University Medical Dental Center of the Faculty of Dental Medicine, Varna, Bulgaria. The child doesn't suffers from systemic medical condition. It is directed for pediatric dentistry treatment by a pediatrician from the clinic in Varna, Bulgaria. The treatment was conducted on local anesthesia of the child in the clinic of the University Medical Dental Center at the Faculty of Dental Medicine, Varna. The level of oral hygiene is determined. Oral-Hygiene Index, OHI-S Greene & Vermillion, is used to establish Oral Hygiene status. The study is realized in the Faculty of Dental Medicine - Varna. Study period 2016-2017 years.

The study is authorized by the Scientific Research Ethics Commission at Varna Medical University and informed consent of each parent.

### **Caries status**

**Methodology:** A dental status is assessed and registered by the WHO criteria.

Units of observation: primary teeth and surfaces with/without carious lesions, active carious lesions at the level of a diagnostic threshold level D1b.

- Diagnostic Scale – codes:
  - D1b - white enamel lesions visible without drying
  - D2 - white enamel cavitated lesion
  - D3+D4 - dentin lesion with and without pulp affection
  - A - active (D1b, D2)
  - Reversible carious lesions - (D1a, D1b)
  - Irreversible carious lesions –D2, D3 and D4

Diagnostic Scale – codes: D1b - white enamel lesions visible without drying. D2 - white enamel cavitated lesion. D3-D4 - dentin lesion with and without affecting the pulp. A - active (D1b, D2). Reversible carious lesions - (D1a, D1b). Irreversible carious lesions – D2, D3 and D4.

The level of oral hygiene is determined – OHI-S=1. Rubber dam was placed on the patient. We found out from the review the presence of caries lesions D3a of the teeth 16, 26 and caries lesions D2 of the teeth 36 and 46. It was used local anesthesia with infiltration for the upper teeth and mandibular block for the lower teeth - 0,9 ml /Scandonest 30 mg/ml/. After placement of local anesthesia for each of the treated teeth with a local anesthetic without corigents, we switched to operative treatment of carious teeth. Cavities affected by caries were treated with minimally invasive preparation techniques with 1-st class cavity. After disinfection, were filled with a light curing nano-hybrid composite for obturation /i-LIGHT<sup>N</sup>/, Figures 1,2,3 and 4. On the non-carious pit and fissures we placed a sealants/i-SEAL LS/ to achieve preventive obturation techniques and results. Teeth 16 and 26 with a diagnosis of caries D3a we treated with the filling method with base of glass ionomer cement, photopolymerizing composite for obturation and after that - a sealant on the healthy pit and fissures. After the treatment of the caries D2 in occlusal surfaces teeth 36 and 46 was completed with a complicated obturation to restore the integrity and anatomy of the teeth with sealing deep fissures, Figures 3,4 and 5.

### **III. DISCUSSION**

An important point in the diagnosis, determining the need for treatment, the selection of a treatment method and means to define the nature of the carious process and to distinguish the active stationed and regressed carious lesions [1]. When you have established control over risk factors can proceed to the remineralization of available primary lesions and successfully stationing and / or regression of carious process [7].

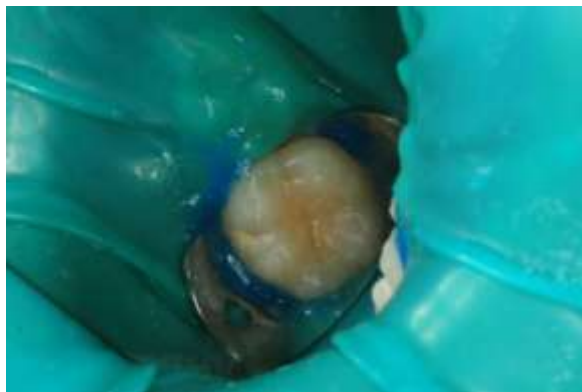
Several cross-sectional studies report that caries in primary teeth is correlated with caries in permanent teeth. This eight-year cohort study was based to determine if caries in the primary dentition can predict caries in the permanent dentition of the same individuals and, if so, with what degree of prediction accuracy. A total of 362 Chinese children, from 3 to 5 years old at the time of the 1992 baseline study, were re-examined in 2000. The study found statistically significant associations between caries prevalence in primary and permanent dentitions ( $p < 0.01$ ). Children having caries in their primary teeth were three times more likely to develop caries in their permanent teeth (relative ratio = 2.6, 95% CI = 1.4-4.7;  $p < 0.001$ ). Caries on primary molars had the highest predictive value (85.4%) [Li Y. et al., 2002, 5].

Based on the high clinical success rates, composite with self-etch adhesives can be recommended for restorative therapy in anterior and posterior permanent teeth [4,6,8,9].

### **IV. CONCLUSION**

1. The operative technique for cavitated lesions of permanent teeth is minimally invasive cavity preparation.
2. The fillings must be of contemporary adhesive restorative dental materials, usable for preventive fillings.

### **Figure legend**



**Figure 1.** Intraoral inspection of occlusal caries D2 of tooth 46



**Figure 2.** Intraoral inspection of occlusal caries D3a of tooth 74 and D2 of tooth 36



**Figure 3.** Intraoral inspection of occlusal caries D2 of tooth 46

Completing treatment with obturating with a light curing nano-hybrid composite



Figure 4. Intraoral inspection of occlusal contacts



Figure 5. Intraoral inspection of occlusal caries D2 of tooth 46

Completing treatment with obturating with a light curing nano-hybrid composite and application a sealant on the healthy pit and fissures

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