

## Hygiene of fixed prosthodontic restorations

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### ABSTRACT

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**Purpose:** To assess of prosthetic restorations' hygiene concerning the patients with metal and metal and porcelain crowns compared to the natural dentition.

**Materials and methods:** Eighteen persons with fixed prosthetic restorations were examined. The hygiene of their permanent restorations was sampled with Plaque Test.

**Results:** The value of the fluorescent indicator was highest on the own teeth, lower value was on metal crowns and the lowest value was observed on

porcelain and metal crowns. The hygiene instructions resulted in the gradual decrease of the indicator's value, which was observed during the following control visits.

**Conclusions:** The researches reveal that the dental plaque has the least adhesive properties in relation to fixed prosthetic restorations made of porcelain and the precise instructions considering the hygiene of an oral cavity has a crucial influence on the improvement of the hygiene of the crowns.

**Key words:** hygiene, fixed restorations, dental plaque

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## INTRODUCTION

Prosthetic rehabilitation comprises the restoration of stomatognathic system's once lost functions, and one of the main conditions defining the success of prosthetic treatment is following the rules for oral cavity hygiene and that of prosthetic restorations [1]. Maintaining good hygiene of oral cavity prevents the lesions around both teeth and periodontium tissues. The tooth plaque and the products of metabolism are considered direct stimulant for inflammatory reactions, which in turn might initiate bone resorption or stimulate inflammatory and immune response, leading to increased bone tissue decline. Proper oral hygiene lead to a substantial decrease of the plaque accumulated on teeth and prosthetic restorations. Saliva flow disorders, increased accumulation of leftover food, and thus the plaque accumulation on prosthetic restorations are the problems connected with their usage. Patients who do not follow the rules of hygiene and clean their prosthetic restorations inadequately are more often diagnosed with periodontitis [2-6]. Many authors conducting clinical and epidemiological researches point to a substantial negligence of hygiene practices by patients with prosthetic restorations [6-11]. As far as plaque is concerned, for its detecting, locating and showing it to patients we can use dyes in form of tablets or solutions. Once applied to the prosthesis' or teeth's surface, it helps identifying and ascertaining the amount of plaque easier. Staining the plaque helps motivating patients to maintain a good oral hygiene and monitoring the efficiency of hygienic procedures [12].

The purpose of this study was to assess of prosthetic restorations' hygiene concerning the patients with metal and metal and porcelain crowns as compared to the natural dentition.

## MATERIALS AND METHODS

Eighteen patients (11 females and 7 males) at the average age of 48 using 24 metal and porcelain and 14 metal crowns were examined. The plaque was colored with Plaque Test (Ivoclar-Vivadent) on both permanent prosthetic restorations and the own teeth. The amount of plaque was estimated under the polymerizing light. Plaque covered with the disclosing liquid has a fluorescent yellow appearance.

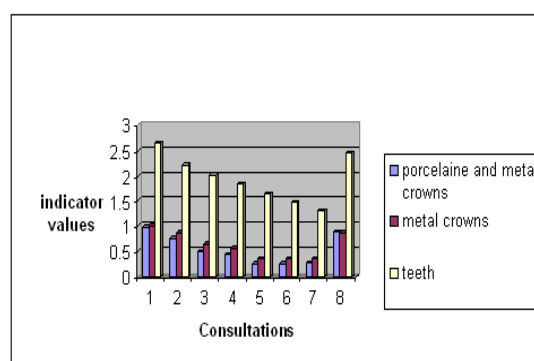
The criteria for assessment:

- 0- No plaque
- 1- Plaque covering not more than 1/3 of tooth crown
- 2- Plaque covering 1/3 to 2/3 of tooth crown
- 3- Plaque covering more than 2/3 of tooth crown

The resulting numerical values were added and divided by the number of the examined teeth, giving the fluorescent indicator value. The values of 0-2 indicate good, 2-4 – sufficient, and 4-6 – bad oral cavity hygiene. The examinations were carried out upon the first dental appointment, after hygienic instruction during next six subsequent visits with 2-week intervals and during the last visit after 3 months.

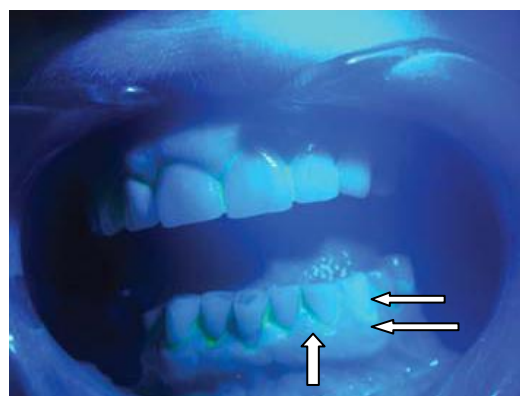
## RESULTS

The values of 2-3 Plaque Test indicator during the first visit were the highest on the own teeth, while on metal crowns the value was 1, and the lowest below-1 values were ascertained on metal and porcelain crowns (Fig.1).



**Figure 1.** The assessment of fluorescent indicator on teeth, metal and metal and porcelain crowns

After the hygienic instruction, the values were gradually being reduced upon subsequent visits every 2 weeks, but the values from the check-up after next 3 months were much worse and resembled those of the first one (Figures 2-4).



**Figure 2.** Patient E.D., teeth 35-43. The example of colored plaque under the polymerized light – first consultation



**Figure 3.** Patient E.D., teeth 35-43 with colored plaque under the polymerized light after hygiene instruction – fourth visit



**Figure 4.** Patient E.D., teeth 35-43 with colored plaque under the polymerized light – eight visit – last one after 3 months' period

## DISCUSSION

The issue of oral cavity and prosthetic restorations hygiene presented in this study shows the importance of patient's dental education. In many studies concerning this matter the authors are far as oral cavity and prosthetic restorations hygiene is concerned. They stress the fact that the end of a treatment should be complemented by precise instruction of oral cavity and prosthesis hygiene [1, 8, 12]. Tejchman et al. [1] have evaluated the quality of oral cavity and prosthetic restorations (containing precise retention elements) hygiene. The results concerned the frequency of hygiene procedures, their duration, type of agents and brushes used. The evaluation of a previously colored plaque was conducted with the help of fuchsin indicator. The authors stress the fact that the patients using the prostheses with precise elements require individual hygiene instruction. The research conducted based on plaque coloring confirm that following the rules for proper oral

cavity and prosthesis hygiene is a condition for the successful prosthetic treatment. The dentists should inform not only about the benefits of the treatment, but also about the dangers of improper prosthesis hygiene. Hygienic negligence has a negative impact on periodontium and thus might be the cause of patient's discontent regarding the usage of prosthetic restorations and might also lead to a complete deterioration of prosthesis. It would be useful to think over the authors' ideas concerning the usage of plaque coloring agents and its possible positive effects concerning hygiene that would eliminate the inflammations caused by the plaque on prostheses and teeth [12]. The unsatisfactory hygiene results after 3 months among the studied patients show that the examinations of teeth and prosthetic restorations conducted every 6 months are of a great importance.

It is important to remember that the dentists and the oral hygienists should be the main information sources for the patient. The medical personnel should be aware that they have the main responsibility for the information and education of the patient for a healthy life style because medics are seen by most of the people as the most reliable information source [13]. The 20th century saw significant progress in eliminating pain and tooth loss. Moreover, during the last 50 years advances in the oral health sciences and in technology, have not only increased our understanding of the nature of these diseases and their causes, but also introduced and tested new approaches to their prevention [14].

## CONCLUSIONS

Dental plaque shows the lowest grade of adhesion when it comes to porcelain prostheses. Precise hygiene instruction had a positive effect on the crowns' condition. Oral cavity and prosthetic restorations hygiene should be under constant supervision and, if needed, verified by the dental professionals during check-up visits. Following the hygiene is one of the most important conditions for a successful prosthetic rehabilitation and patients' positive opinion on the restorations.

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