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**Changes of environment in oral cavity during early phase of the orthodontic treatment**

Aim of this study was to assess the influence of fixed orthodontic appliance on some caries risk factors in orthodontic patients during early phase of the orthodontic treatment. The research was conducted on 22 patients (mean age=25.1) who satisfied inclusion criteria: healthy systemic and periodontal condition, avoidance of antibiotics and antiseptic mouthwashes in the past three months. All clinical measurements took place at T1 (prior to fixed orthodontic appliance placement) and T2 (twelve weeks after placement of fixed orthodontic appliance) in the following order: 1) stimulated saliva flow (SS) 2) OHI-S index and 3) DMFT index. Polymerase chain reaction (PCR) was used to detect presence of *S. mutans* and *S. sobrinus*. Results indicated significant improvement in OHI-S index (p=0,004) from T1 to T2. Tests of correlation demonstrated no significant correlation between DMFT and other variables. Therefore, we divided patients according DMFT into two groups, with low (DMFT<11.44) and high past caries experience (DMFT>11.44). Non paired t-test did not show significant difference in the SS between those two groups (p=0,452 at T1, p=0,888 at T2). Mann-Whitney test also did not show significant difference in OHI-S index between groups (p=0,173 at T1, p=0,669 at T2). Using PCR method, *S. mutans* was detected in 2 patients at T1 in subjects with high past caries experience. At T2 two more patients from same group had *S. mutans*, statistical significance was not found (p=0,157). *S. sobrinus* was not detected at T1 and two patients from high past caries experience group were positive at T2. We can conclude that fixed orthodontic appliances may induce detrimental changes in composition of cariogenic microorganisms (increase of *S. mutans* from T1 to T2 was 100%), even in the presence of enhanced oral hygiene (Z=-2,908, p=0,004).

Fixed orthodontic appliances in short period of time may induce detrimental changes in composition of oral microflora even in the presence of enhanced oral hygiene.

Clinical studies

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