

# Changes of Oral Environment of Orthodontic Patients by TBI

## - Evaluation of Electric Toothbrush -

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### [Objective]

In general, it is necessary to maintain a good environment in the oral cavity to prevent secondary dental diseases in orthodontic treatment using multi-bracket orthodontic appliances, and for this purpose, self-care by brushing plays an important role. The environment in the oral cavity is comprehensively assessed based on markers such as salivary bacterial counts determined by real-time quantitative PCR in mass dental examinations and patients treated for periodontal diseases. However, there has been no report on the use of such an approach to patients under orthodontic treatment. The present study evaluated changes in the environment in the oral cavity in patients under orthodontic treatment by giving tooth brushing instructions (TBI) using an electric toothbrush developed to prevent bacteria from adsorbing to the tooth

surface by taking advantage of weak electric current.

#### [Materials and Methods]

Included in the study were 19 patients (7 men and 12 women; mean age: 28.5) who initiated treatment using a multi-bracket orthodontic appliance and completed leveling at the orthodontic outpatient unit of this hospital. All patients were randomized to use an electric toothbrush with (test group) or without (control group) a built-in electric cell after receiving TBI from dentists and were asked to brush their teeth with the assigned toothbrush without using dentifrice for 3 weeks. The following 5 parameters were determined before (T0) and 3 weeks after TBI (T1): 1) bacterial count, 2) plaque index (PI), 3) gingival index (GI), 4) probing pocket depth (PPD), and 5) bleeding on probing (BOP). Wilcoxon's rank sum test was used for statistical analysis ( $p < 0.05$ ).

#### [Results and discussions]

At T0, no parameter showed any significant difference between the test and control groups. In the control group, a tendency toward improvement was observed at T1 compared to T0, but changes were not significant, while in the test group, parameters 1) through 4) above showed significant changes, suggesting that comprehensive assessment of the environment in the oral cavity is useful in patients under orthodontic

treatment and that the use of the electric toothbrush with TBI contributes to improvement of the environment in the oral cavity.

[Conclusion]

Findings obtained in the present study suggested that the use of the electric toothbrush with TBI is useful for improving the environment in the oral cavity in patients under orthodontic treatment.