

The effect of electric-powered ionic toothbrushing on plaque removal – randomized clinical trial –

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Background & Aim: A previous study showed that the ionic toothbrush was more effective than the standard non-ionic toothbrush owing to a change in the polarity of the tooth surface. The aim of this study was to evaluate the plaque removal efficacy of the newly developed ionic electric-powered toothbrush.

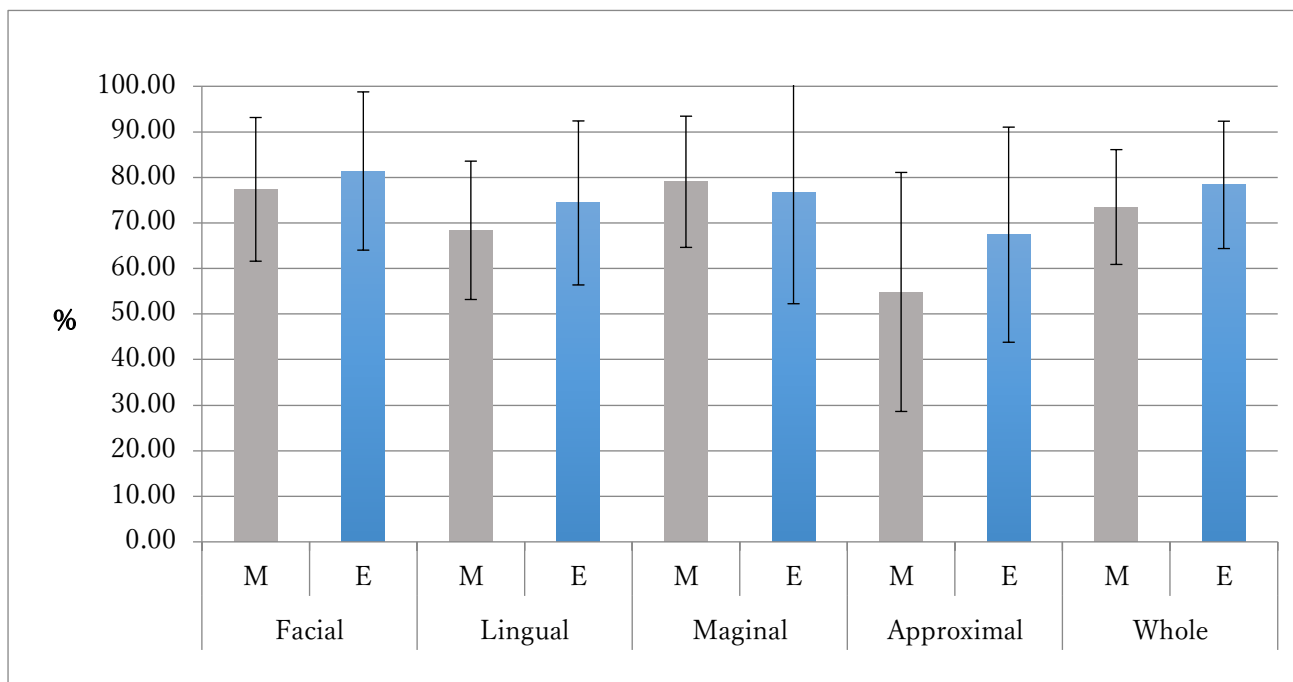
Methods: This was a randomized, single-blind, crossover study. Thirty volunteers from the Department of Periodontology, Tokyo Medical and Dental University, were recruited in the trial. The subjects were randomly divided into two groups to use either the manual or newly developed electric-powered ionic toothbrush. The rotational frequency of the electronic toothbrush was 11,000 rotations per minute, and an ion generator was installed in the tooth brush handgrip with a coin-type battery for producing an electric current of 100 μ A. The subjects were required to refrain from any oral hygiene 1 day before the examination. Full-mouth oral photography was taken with plaque staining before and immediately after 2 minutes of toothbrushing. One blinded experienced evaluator assessed the plaque removal sites on the basis of the Rustogi Modified Navy Plaque Index (RMNPI) by viewing the photographs. One week after the examination, the group was switched to another brushing group. The Wilcoxon signed-rank test was used for the statistical analyses.

Results: The mean age of the subjects was 28.6 ± 1.4 years. All the participants completed the study. No significant differences in pre-brushing RMNPI scores and probing pocket depth were found. The whole-mouth, gingival marginal, and interproximal plaque scores of the incisors did not significantly differ between the two groups. The RMNPI scores of the premolars and molars were significantly lower with the electronic toothbrush than with the non-electronic toothbrush.

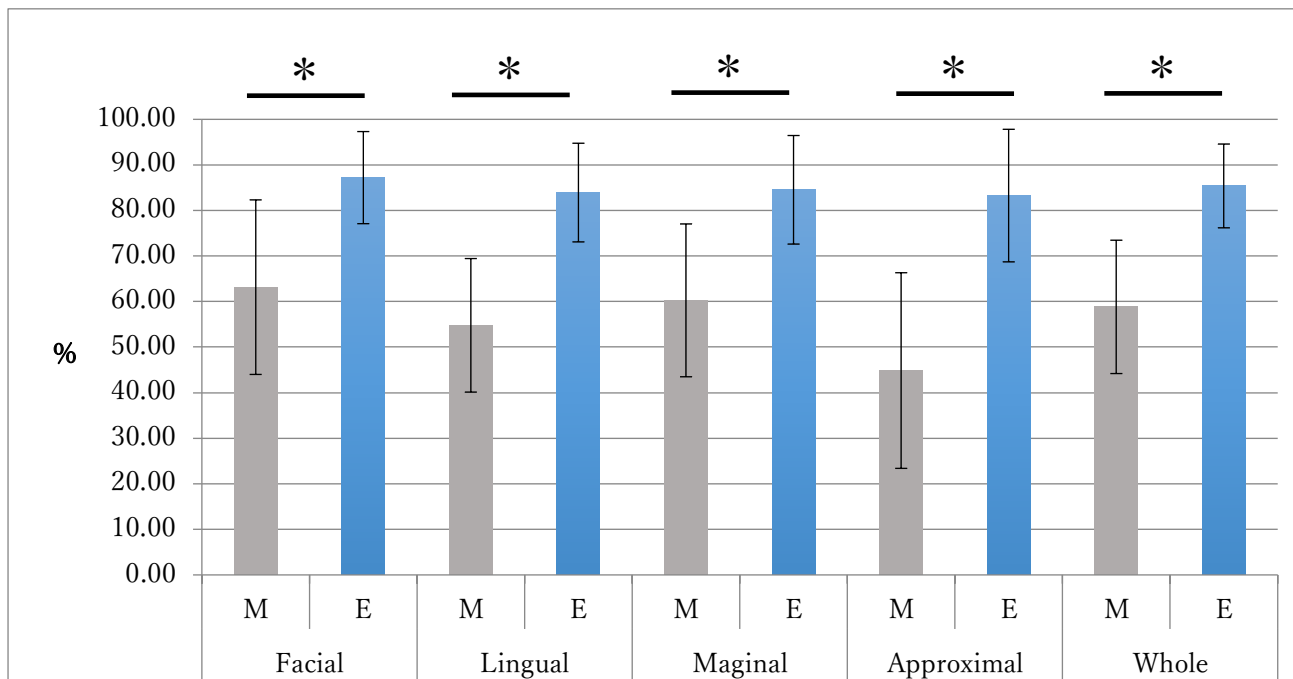
Conclusions: Electric-powered ionic toothbrushing is more effective than the manual ionic toothbrushing for removing plaque in premolars and molars.

<Plaque removal rate> M: Manual toothbrush E: Electric

Incisor



First premolar



First molar

