Planimetrical assessment of simulated organic plaque removal by different flossing

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Objectives:
Interaldental plaque removal plays a pivotal role in preventing caries and periodontitis in susceptible subjects. Therefore, it was the aim to test ex-vivo the cleaning efficacy of (i) a flosser with crossing filaments and to compare to (ii) a conventional flosser and to (iii) a conventional rolled floss using organic plaque simulation (Flad et al., 2016) and computer-assisted planimetrical assessment of interdental risk fields.

Material and Methods:
Plaque removal efficacy at 20 interdental planimetric coronal and root risk fields buccally and lingually (ACDF+W) and mesially and distally (XYZ+W1W2) by prototype DenTek Cross Flosser, DenTek Triple Clean Flosser (Dentek Oral Care Inc., Tarrytown, NY, USA) and by Oral-B Glide Floss (Procter & Gamble, Cincinnati, OH, USA) was assessed. Typodont teeth (4 incisors, 1 canine, 2 premolars and 3 molars) in anatomical position were covered with organic plaque simulation. Interaldental spaces were flossed with two gliding strokes below the contact point in up and down motion parallel to the tooth axis. Tests were executed seven times. Percentage of plaque removal at risk fields at four sites per tooth was documented by optical planimetry. Cleaning efficacy at all teeth underwent statistical approval between the test devices. The null hypothesis H0 was accepted for all 10 risk field parameters (KS-test) and the independent two samples t-test was applied with the Bonferroni correction.

Results:
Cross Flosser exhibited the best plaque control efficacy coronally in-between the teeth, with mean values from 26.0 to 27.5% of plaque removal, different (p<0.05) from Triple Clean (19.0 to 20.4%) and from Glide Dental Floss (19.6 to 19.7%). The total interdental plaque removal around all crowns and roots of premolars and molars was again in favor of the Cross Flosser with mean percentages of 18.2 vs.11.7 (Triple Clean) and 10.1 (Glide).

Analysis of single teeth showed different cleaning efficacies depending from anatomical space in-between the teeth risk fields, with mean percentages of 19.8% in-between the teeth risk fields and lingually (ACDF+W) and mesially and distally (XYZ+W1W2). Cross Flosser was most effective around canines, premolars and molars. Cross Flossing at 20 interdental risk fields.

Conclusions:
The new ex-vivo test methodology of interdental cleaning with flossers compared to flossing is highly standardized. The planimetric plaque control at four sites of teeth results in precise efficacy values. The innovative Cross Flosser removes more plaque compared to the conventional single filament flosser and to flossing. Therefore, X-floss filaments are superior in cleaning open interdental spaces. Sponsored by Dentek Oral Care Inc.

Tarrytown, NY, USA

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Lang et al., 2011).

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