

## Outcomes of Dental Water Jet compared to Traditional Dental Floss

### Comparison of Irrigation to Floss as an Adjunct to Toothbrushing: Effect on Bleeding, Gingivitis, and Supragingival Plaque

Barnes CM, Russell CM, Reinhardt RA, Payne JB, Lyle DM

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#### Objective:

To assess the efficacy of the addition of daily oral irrigation to both power and manual toothbrushing to a traditional regime of manual toothbrushing and flossing to determine which regimen has the greatest effect on the reduction of gingival bleeding, gingivitis and supragingival plaque.

#### Design:

Examiner blind, parallel, randomized, single-center, four-week study.

#### Methodology:

One hundred five (105) subjects aged 19-70 years of age, in good general health, with at least 20 evaluable teeth and an overall mean plaque score of 2.0 and 50% bleeding sites were entered into the study. Subjects reported brushing at least daily. Data was collected at baseline (BSL), day 14 (D14) and day 28 (D28).

Written and verbal brushing, flossing and irrigation instructions were provided. Subjects were asked to brush for two minutes twice a day and to floss once daily in the evening. Irrigation was to be done once daily in the evening with the pressure set at medium with 500 ml of luke warm water. No additional oral hygiene aids, including therapeutic rinsing were allowed. Subjects were randomized to three groups:

- **Group 1 (G1/control):** Manual toothbrushing (Oral-B<sup>®</sup> 35, Oral-B<sup>®</sup> Laboratories, Boston, MA) and dental floss (Reach<sup>®</sup> Floss, Johnson & Johnson, Skillman, NJ)
- **Group 2 (G2):** Manual toothbrush (Oral-B<sup>®</sup> 35) and a Waterpik<sup>®</sup> dental water jet (Model WP-60W, Waterpik Technologies, Fort Collins, CO)
- **Group 3 (G3):** Waterpik<sup>®</sup> SenSonic<sup>®</sup> toothbrush (Model SR-700W, Waterpik Technologies, Fort Collins, CO) and a Waterpik<sup>®</sup> dental water jet (Model WP-60W).

#### Results:

- **Gingivitis index (GI):** At D14 and D28, G2 was significantly better than G1 for the facial surfaces. G3 was significantly better than G1 at D14 but not at D28 for the facial surfaces. On the lingual surfaces, there were no significant differences between the groups at D14. At D28, G2 was significantly better than G1 on the lingual surfaces.
- **Bleeding index (BI):** On the facial surfaces, both irrigation groups (G2 and G3) were significantly greater than G1 at D14 and D28. For the lingual surfaces, there were no significant differences between G1 and G2 or between G1 and G3 at any follow-up point.
- **Plaque index (PI):** For the facial surfaces, G3 was significantly better than G1 at D14 and D28. G2 was significantly better than G1 at D14, but at D28 there were no significant differences. For the lingual surfaces, there were no significant differences between G2 and G1 or G3 and G1 at any follow-up point.

### Percent Reduction from Baseline to D14

Clinical Reduction	MTB + OI Group 2	PTB + OI Group 3	MTB + FL Group 1
Gingivitis/facial	17.1%*	15.8%*	11.3%
Gingivitis/lingual	13.5%	11.9%	12.4%
Bleeding/facial	64.2%*	60.6%*	47.3%
Bleeding/lingual	40.7%	41.0%	31.2%
Plaque/facial	11.5%*	17.6*	5.1%
Plaque/lingual	9.5%	9.9%	5.7%

\*Statistically significant difference compared to MTB + FL at D14

### Percent Reductions from Baseline to D28

Clinical Reduction	MTB + OI Group 2	PTB + OI Group 3	MTB + FL Group 1
Gingivitis/facial	15.1%*	11.4%	9.9%
Gingivitis/lingual	14.2%*	10.8%	9.4%
Bleeding/facial	59.2%*	50.6%*	30.6%
Bleeding/lingual	37.7%	36.2%	26.9%
Plaque/facial	8.8%	17.3%*	9.0%
Plaque/lingual	10.2%	9.4%	8.1%

\*Statistically significant difference compared to MTB + FL at D28

### Conclusions:

- At the conclusion of the study, a manual toothbrush plus a Waterpik® dental water jet was 93% better in reducing facial bleeding and 52% better at reducing facial gingivitis than manual brushing and flossing.
- At the conclusion of the study, a power toothbrush plus a Waterpik® dental water jet was 65% better at reducing facial bleeding and 92% better at reducing facial plaque than manual brushing and flossing.

### Clinical Implications:

- This study indicates that when combined with toothbrushing, oral irrigation is an effective alternative to traditional dental floss for reducing bleeding, gingival inflammation and plaque and in some cases may provide superior results for reducing bleeding and gingival inflammation.
- Significant improvements in oral health occurred regardless of toothbrush type, so it is likely that many patients currently using a power toothbrush may get further improvements in oral health by the addition of oral irrigation.
- The recommendation of a Waterpik® dental water jet is a viable alternative in order to achieve desired outcomes for non-compliant individuals or those who cannot floss effectively.