

## **Benefits for Individuals with Diabetes**

### **Comparative Evaluation of Adjunctive Oral Irrigation in Diabetes**

Al-Mubarek S, Ciancio S, Aljada A, Awa H, Hamouida W, Ghanim H, Zambon J, Boardman T, Mohanty P, Ross C, Dandona P. J Clin Periodontol 2002; 29:295-300.

#### **Objective**

To evaluate the response of periodontal tissue health of diabetics to conventional periodontal treatment in conjunction subgingival home oral irrigation on clinical and metabolic parameters.

#### **Design**

Single-center, examiner blind, randomized, 3 month clinical study

#### **Methodology**

52 diabetic subjects with periodontal disease were enrolled in the study. Requirements included having diabetes for > 1 year, on the same type and dose of diabetes medication for 6 mos, probing depths of > 5mm and < 8mm in at least one site in 4 teeth in at least 2 different quadrants.

All subjects received scaling and root planing at baseline. The subjects were assigned to one of two groups:

- Normal oral hygiene (flossing allowed if it was a part of their routine)
- Normal oral hygiene (flossing allowed if it was a part of their routine) plus twice daily oral irrigation (Waterpik® oral cleaning system) with water via the Pik Pocket® subgingival irrigation tip.

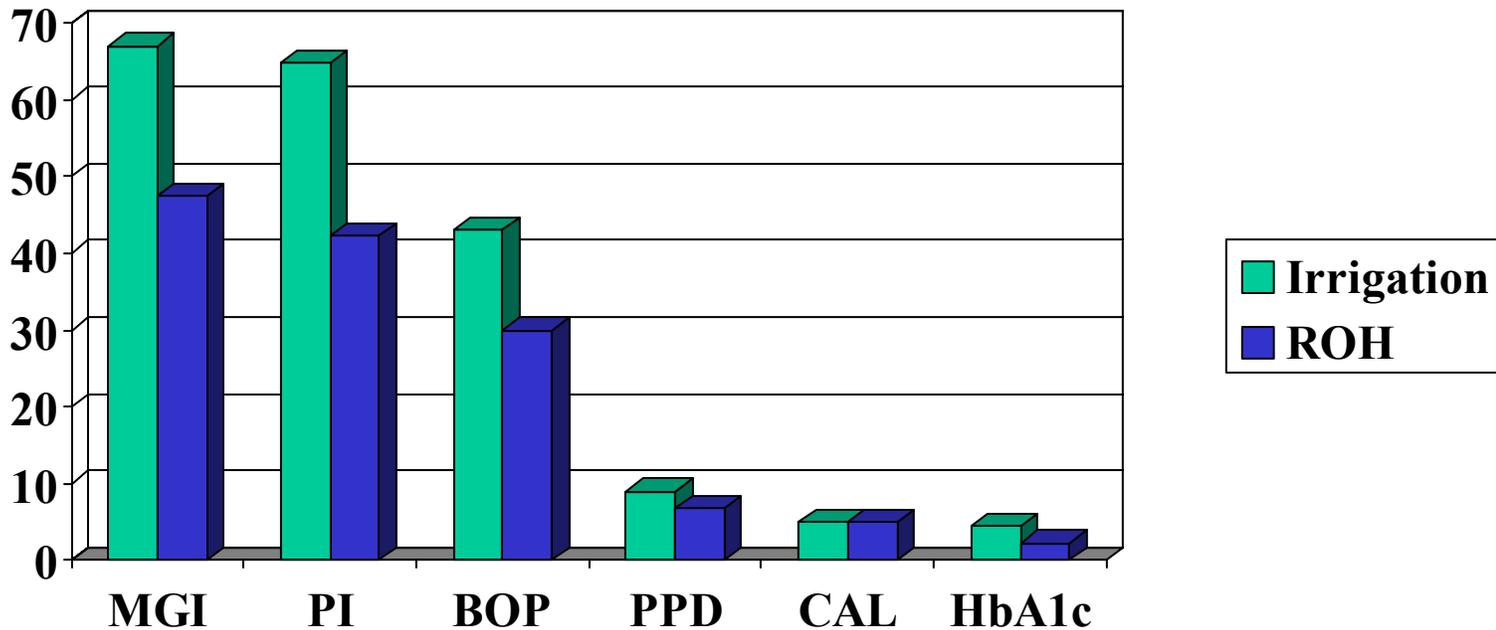
#### **Results**

- Oral irrigation was superior to the normal oral hygiene group in reducing plaque, gingivitis, and bleeding on probing
- The oral irrigation group had better improvements in probing depth and clinical attachment gain, although the results were not statistically significant
- Both groups had significant improvements for glycated hemoglobin, measure associated with metabolic control
- The addition of oral irrigation to routine oral hygiene resulted in significant reductions in pro-inflammatory mediator reductions, IL-1 $\beta$  and PGE<sub>2</sub> plus a rise in the anti-inflammatory cytokine, IL-10
- The oral irrigation group had a statistically significant reduction in the level of reactive oxygen species (ROS), a bacteria and host-mediated pathway for tissue destruction, implicated in the pathogenesis of over 100 conditions.

#### **Clinical Implications**

The inclusion of subgingival water irrigation as an adjunctive therapy may have a cumulative positive influence in regaining periodontal tissue health within diabetic subjects compared to normal oral hygiene.

## Percent Reduction from Baseline



### Glossary

**IL-1 $\beta$**  – **Interleukin 1 beta:** Principal mediator of inflammatory responses acting on many cell types. Most potent known inducer of bone demineralization. Has potential to initiate tissue destruction and bone loss in periodontal disease

**PGE<sub>2</sub>** – **Prostaglandin E<sub>2</sub>:** Arachidonic acid metabolite, which induces increased vasopermeability and vasodilation leading to redness and edema. Moderately potent stimulator of bone resorption.

**IL-10** – **Interleukin 10:** Referred to as an “anti-inflammatory” cytokine. Plays major role in suppressing immune and inflammatory responses. Has been shown to down-regulate IL-1 $\beta$  secretions.

**ROS** – **reactive oxygen species:** Free radicals associated with impaired neutrophil function, excessive inflammatory response, collagen turnover defects, and impaired wound healing. May increase the severity of periodontal disease. Has been implicated in the pathogenesis of over 100 conditions.

**HbA<sub>1C</sub> - glycated hemoglobin:** Preferred standard for assessing glycemic control. Reflects the previous 2-3 months of glycemic control. The American Diabetes Association recommends that the goal of therapy should be an A<sub>1C</sub> result of <7%. For results consistently >8%, physicians should reevaluate and in most cases significantly change treatment regimes.<sup>1</sup>

1. Goldstein DE et al. Tests of glycemic control in diabetes. *Diabetes Care* 2003; 26:S106-S108.