Comparing Acidity and Dental-hypersensitivity between Arginine Mouthrinse and SDF

Michael Mears, DMD; Luke Keating, MA; Jeannine Weiss, DDS • Jamaica Hospital Medical Center, Department of Dental Medicine

Background

→ Silver diamine fluoride (SDF) contains ammonia, which is alkaline and can increase the oral cavity's pH.[1] Arginine also produces ammonia after catabolism through the arginine deiminase system.[2]

→ The literature has also shown that both arginine and SDF can reduce dental-hypersensitivity (DH) through sealing dentinal tubules.[3] However, no empirical studies have directly compared SDF to arginine.

→ The aim of this two-arm, parallel-group, pragmatic trial was to compare the effects of arginine and SDF. Arginine was hypothesized to have a greater reduction in DH and a lesser pH increase than SDF.

Methods

→ Pediatric patients with no active carious lesions were recruited from a NYC hospital in 2024.

→ pH litmus paper strips were utilized to measure pH three times at baseline visit: after exposure to tap water "Pre-Intervention pH", after exposure to SDF or arginine "Intervention pH", and finally after Coronal Polishing. This was replicated at the follow-up visit.

→ DH was tested by spraying air across each dental arch. Alternate allocation was used to assign patients to either the arginine (0.8% arginine mouth rinse) or SDF (38% silver fluoride solution) group.

Results

→ Thirty-six patients ranging in age from 4 to 10 years old (M = 6.44, SD = 1.84) were enrolled and 33 were assessed at follow-up. Follow up visits ranged from 14 to 36 days (M = 22.45, SD = 5.26).

→ There were significant within-visit increases in oral pH relative to baseline in both groups (Ps < .001) and further increments after coronal polishing (Ps < .001).

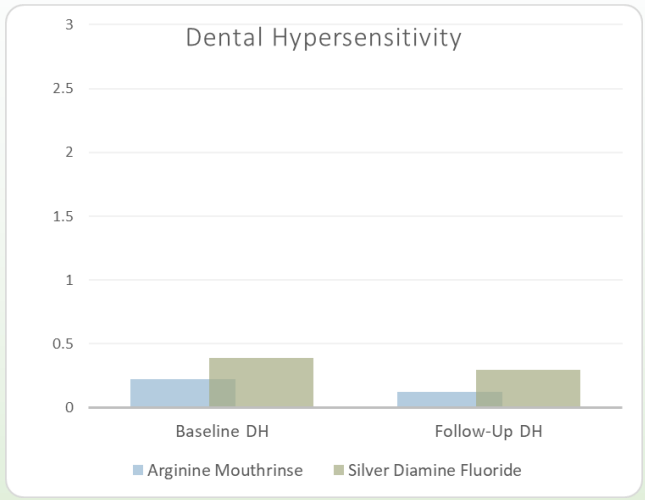
→ There were no significant differences in pH when comparing SDF to arginine group. There were no significant differences in DH within nor across groups.

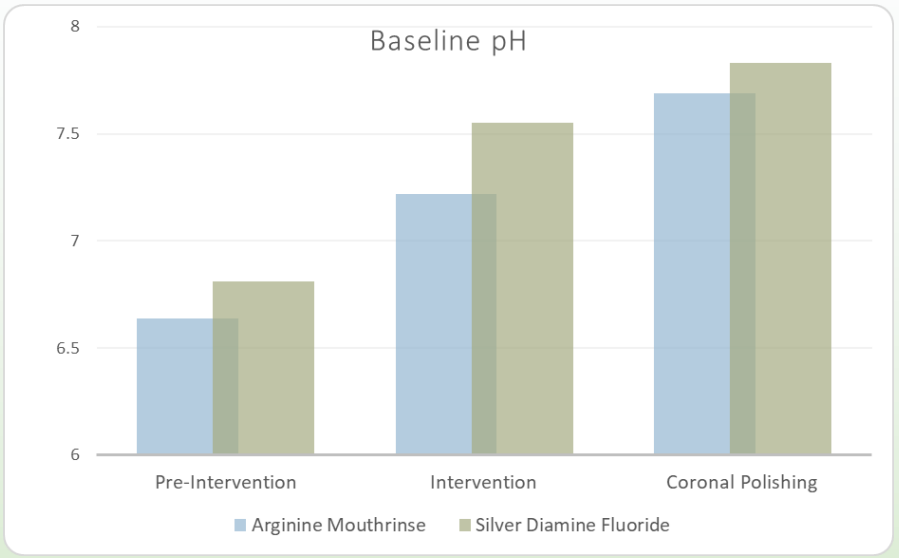
Discussion

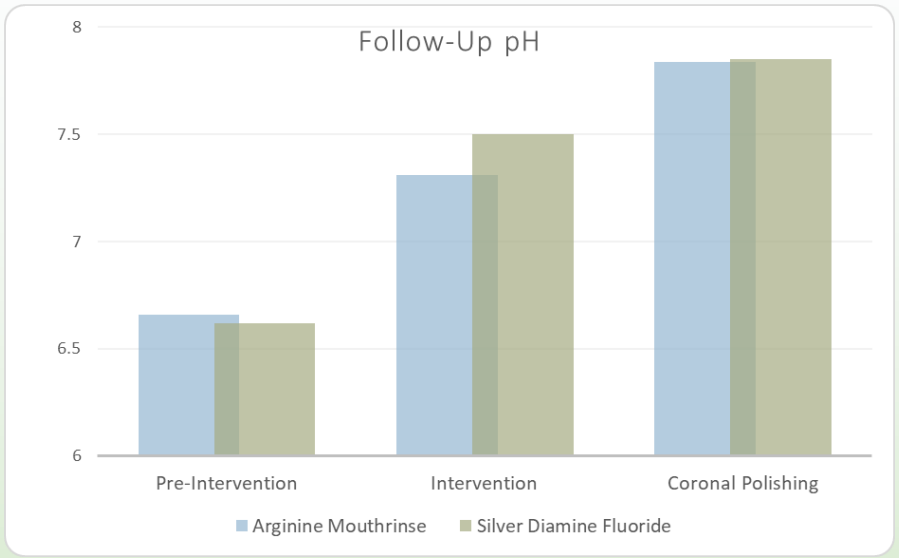
→ Partially consistent with hypotheses, findings support both SDF and arginine as effective in increasing oral pH, but not in reducing DH.

→ As such, an over-the-counter arginine mouthrinse may be a more accessible – and similarly effective – alternative to SDF to lower oral pH levels and caries risk.

→ Coronal polishing demonstrated potentially synergistic effects. This can be justified by the multifactorial etiology of caries; reduction of dental plaque may have the greatest effect on oral pH.







References

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