

Comparison of effect of SDF on interproximal surfaces of primary teeth compared to permanent teeth



Virtue Omere, DDS¹, Raffi Miller, DMD²

¹PGY-2 Resident, ²Associate Director

NYU Langone Hospitals-Advanced Education in Pediatric Dentistry, Brooklyn, NY

The Hansjorg Wyss Department of Plastic Surgery

NYU Langone Dental Postdoctoral

Residency Programs

INTRODUCTION

Contemporary caries management philosophy has changed from the surgical approach to a medical model, and fluoride therapy is now used to prevent and to arrest caries.¹ Silver diamine fluoride (SDF) is a cost-effective agent in the management of dental caries² and is beneficial to children from lower economic classes, who have no access to conventional dental care.¹ The antibacterial effect of silver and the remineralization effect of fluoride in the SDF solution brings about the desired effect of caries arrest and prevention,³ and 38% of SDF concentration has been found to be more effective.^{4,5,6}

Systematic reviews of clinical trials confirm the effectiveness of SDF as a caries-arresting agent for primary teeth and root caries and its ease of use, low cost, and relative safety.³

Studies have found that children with early childhood caries and caries in the deciduous dentition developed caries in the permanent teeth in a 5-year period. Therefore, low-cost preventive measures, like SDF therapy, is important in children with high caries risk.^{7,8}

PURPOSE

To investigate the efficacy of preventing the growth of dental caries using silver diamine fluoride (SDF) on patients with interproximal caries (dental caries between teeth).

To compare the efficacy of SDF in arresting caries at least 12 months after application on interproximal surfaces of primary and permanent teeth in pediatric patients who received at least two applications

METHODS

- A retrospective chart review of patients of the NYU Langone Health-affiliated health center located in Massachusetts who received at least 2 applications of SDF treatment and presented for at least 12 months follow-up after the second SDF application.
- Data was collected from 270 patients ages 3 to 17 years, from 01/01/2017 – 12/31/2020.
- Chi-square and t-test analyses evaluated the treatment modalities' variables

TABLE 1: DEMOGRAPHICS

Variable	Overall	Permanent	Primary	p value	
N	270	100	170		
Age (years) (mean (SD))	9.03 (3.79)	13.17 (2.43)	6.60 (1.82)	<0.001	
Gender (%)	Female	132 (48.9)	67 (67.0)	65 (38.2)	<0.001
	Male	138 (51.1)	33 (33.0)	105 (61.8)	
Ethnicity (%)	Black (non-Hispanic)	11 (4.1)	2 (2.0)	9 (5.3)	0.005
	Declined to specify	6 (2.2)	1 (1.0)	5 (2.9)	
	Hispanic	219 (81.1)	80 (80.0)	139 (81.8)	
	Unknown	7 (2.6)	0 (0.0)	7 (4.1)	
	White (non-Hispanic)	27 (10.0)	17 (17.0)	10 (5.9)	
Tooth location (%)	Anterior	11 (4.1)	0 (0.0)	11 (6.5)	0.023
	Posterior	259 (95.9)	100 (100.0)	159 (93.5)	
Number of Applications (%)	2 applications	228 (84.4)	93 (93.0)	135 (79.4)	0.005
	More than 2 applications	42 (15.6)	7 (7.0)	35 (20.6)	

TABLE 2: RESULTS AT FOLLOW-UP

Result	Overall	Permanent	Primary	p value
Arrested no treatment (%)	145 (53.7)	76 (76.0)	69 (40.6)	<0.001
Exfoliated (%)	18 (6.7)	0 (0.0)	18 (10.6)	
Non-arrested but needs treatment (%)	58 (21.5)	17 (17.0)	41 (24.1)	
Non-arrested treatment completed (%)	49 (18.1)	7 (7.0)	42 (24.7)	

TABLE 3: INDICATION OF TREATMENT FAILURE

Indication for failure	Overall	Permanent	Primary	p value
Lesion progression (%)	70 (25.9)	19 (19.0)	51 (30.0)	0.065
Need for restoration (%)	104 (38.5)	23 (23.0)	81 (47.6)	<0.001

RESULTS

- Of the 270 carious lesions in this study, 145 (53.7%) were arrested and needed no treatment, and of these 145 lesions, 76 (76%) were in permanent teeth while 69 (40.6%) were in primary teeth. There were significantly more arrested lesions in permanent vs primary teeth (p <0.001). The indication for treatment failure was the need for treatment, lesion progression and treatment completion. The need for restoration was significantly higher in primary than permanent teeth (p <0.001) (Tables 2 and 3)
- This result showed a significant difference between primary and permanent teeth (p<0.001), indicating that SDF was more effective in arresting caries in the interproximal surfaces of permanent teeth than in primary teeth

CONCLUSIONS

- 1.SDF was more effect in arresting caries on the interproximal surface of permanent 76 (76%) teeth compared to primary teeth, 69 (40.6%) with p value of 0.001
- 2.Further studies on the efficacy of SDF on permanent teeth are needed as not many studies have been done to substantiate the result of this study.

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