Analyzing Plaque Accumulation in the Anterior Maxilla in Children

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Introduction

Oral health promotion in school aged children and adolescents has been an area of interest. Oral health education is effective in improving the knowledge, positive attitude, decreasing preventable oral disease.[1] Effective tooth brushing in children depends on several factors including oral hygiene knowledge, motivation, brushing method and duration, brush design and parental involvement in brushing.[2] Therefore, patient education emphasizing the etiology, characteristics, and prevention of oral diseases as well as self hygiene skills are critical.[3] Dental plaque disclosing agents are used for identification of dental plaque and provide a valuable visual aid in maintaining good oral health, by staining plaque accumulations. Previous studies have suggested that self-checking with disclosing solution maybe effective in improving oral hygiene among school children in the home.[4] This study determines the site- specific dental plaque biofilms in the oral cavity of children 8 to 15 years old using disclosing solution. Localization of dental plaque with disclosing solution is an effective way of establishing good oral hygiene habits in this age group by educating both parents and children as children at this age start brushing independently. Helping patients to understand their disease process and the preventive actions required, may motivate them to change their oral self-care behaviors thus reducing their risk of oral disease.

Hypothesis

There is a difference in dental plaque biofilms scores on the facial surfaces of maxillary anterior teeth (#7,#8,#9,#10) as compared to buccal surfaces of teeth #3, and #14, lingual surfaces of teeth #19 and #30.

Purpose

This study was designed to determine site specific dental plaque biofilms in the oral cavity of children 8 to 15 years old using disclosing solution.

Results

Student paired t-test using SPSS analyzed the data set. Our results indicated that there is a significant difference in plaque score and plaque index in maxillary anterior teeth labial surface as compared to maxillary first molars buccal surface and mandibular first molars lingual surface.
The mean plaque score and plaque index were 2.42 and 2.42 for anterior teeth, 1.92, and 1.96 for posterior teeth.
The plaque score and plaque index were significantly higher in maxillary anterior teeth labial surfaces (P<001).

Methods

This study was conducted on 50 children presenting for dental cleaning appointments. children were instructed to rinse their mouth to remove any existing food residues. In addition, Vaseline was applied to their lips so that the disclosing agent does not stain them. Using cotton swab, Trace® disclosing solution was applied on the labial surface of the four maxillary anterior teeth (Teeth #7, #8, #9, and #10), buccal (outside) surface of teeth #3, and #14, lingual (inside) surfaces of teeth #19, and #30.
Plaque score and plaque index were compared between anterior and posterior teeth.
Plaque score and plaque index were measured on these surfaces based on simplified oral hygiene index:[5]

0. No staining present on facial or Lingual surface of the tooth.
1. Not more than one third of the facial or lingual surface of the tooth covered with staining.
2. Staining covers more than one third but no more than two third of the Facial or lingual surface.
3. Staining covers more than two third of facial or lingual surface of the tooth.

To determine plaque index, the plaque scores were totaled and divided by the number of surfaces scored.

The stained plaque was removed from teeth during the child cleaning appointment with prophy paste.
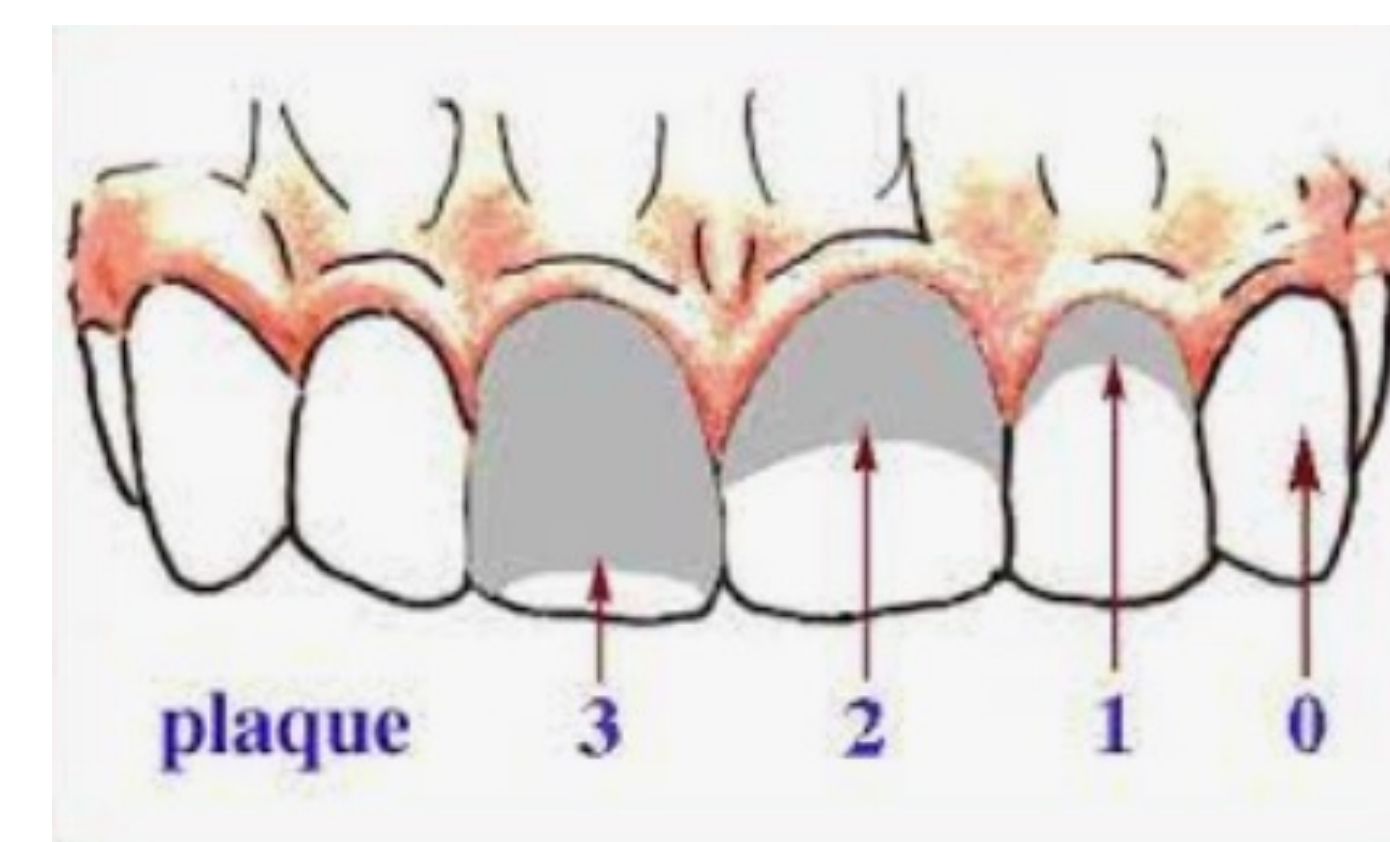
Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	posterior	1.9150	200	.92306	.06527
	anterior	2.4200	200	.88175	.06235

Paired Samples Test

		Paired Differences					Significance		
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	posterior – anterior	-.50500	1.19462	.08447	-.67158	-.33842	-5.978	199	<.001	<.001

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	indexpos	1.96	50	.566	.080
	indexant	2.42	50	.715	.101

Paired Samples Test

		Paired Differences						Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	indexpos – indexant	-.465	.751	.106	-.678	-.252	-4.379	49	<.001	<.001

Discussion

In the present study, dental plaque biofilm scores were analyzed using disclosing solution. The results of our study confirm the research hypothesis. Significantly higher plaque score and plaque index in maxillary anterior region indicates incomplete or inefficient oral hygiene in school aged children. Children at this age range do not have adequate training and skills in cleaning inaccessible areas in their mouth such as maxillary anterior region due to lip coverage. This demonstrates the need for continuous and regular preventive interventions. Therefore, Parents and children's knowledge of oral hygiene techniques, their motivation, frequency, duration, and methods of brushing, are important factors in effective dental plaque biofilms removal.[2]

Conclusion

Based on the findings from this study, significantly higher plaque score and plaque index were found in the maxillary anterior region. This suggests that children ages 8-15 do not brush their anterior teeth as effectively as posterior teeth.

References:
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