

ASSOCIATION BETWEEN ORAL HYGIENE MAINTENANCE AND DENTAL HEALTH OUTCOMES

RUBY KHAN^a, AND MOHD HAROON KHAN^{b1}

^aDepartment of Periodontics K D Dental College Mathura, UP, India

^bDepartment of Community Medicine, S.H.K.M., Govt. Medical College Nalhar (Nuh), Haryana India

ABSTRACT

The natural physiological forces that clean the oral cavity are not sufficient enough to remove dental plaque. Tongue movement and saliva flow has some degree of potential to clean debris from facial, lingual, interproximal spaces and occlusal pits but is less effective in complete removal of plaque. At the start of the study the patients were demonstrated the brushing technique and other oral hygiene procedures. At baseline the OHI-S were taken. After that scaling and root planning were performed and patients were counselled and instructed for oral hygiene practices. The patients were recalled after 1 month, 3 months and 6 months respectively to assess the OHI-S Conclusion: It was observed that the OHI-S score were reduced gradually after a period of 1 month, 3 months, & 6 months. It was concluded that better oral hygiene practices reduce OHI-S score statistically significantly.

KEYWORDS: Dental plaque, Oral Hygiene, Oral hygiene index score, Interproximal intrabony defect

The natural physiological forces that clean the oral cavity are not sufficient enough to remove dental plaque. Tongue movement and saliva flow has some degree of potential to clean debris from facial, lingual, interproximal spaces and occlusal pits but is less effective in complete removal of plaque. These defenses are classified as superficial actions in controlling plaque build-up and hence the dental community gives confidence to proper oral hygiene and more effective use of mechanical cleaning devices (Ainamo et al., 1971, American Academy of Periodontology, Christersson 1991).

Literature recognises the toothbrush as the bastion of all oral defence mechanisms. The toothbrush provides the means by which the dentifrice is distributed to a tooth's surface and it disrupts and dislodges plaque and oral debris from these surfaces. The effectiveness of the toothbrush, however, depends on any one individual acquiring the skills and having the personal motivation to use it properly.

The importance of keeping the oral cavity free of plaque and debris is important because of the documented association of dental plaque with oral health breakdown resulting in dental caries, gingivitis and periodontal disease (Christersson 1991).

However, the motivation expressed by most people for cleaning their mouth is the desirability of enhancing the mouth's attractiveness through the elimination of mouth odors, noticeable stain and film

formation. Even though the main reason for counseling plaque control by the dental community is dental health, dental health maintenance is probably achieved on a daily basis through a conscious attempt on the part of many individuals to achieve social confidence (Macgregor 1991). This study was undertaken to estimate the changes in the oral hygiene scores (OHI-S) after a oral hygiene maintenance at 1 month, 3 months and 6 months.

MATERIALS AND METHODS

The study population consisted of twenty subjects with 10 females and 10 males aged 20-46 years, selected from the undergraduate clinic, Periodontics of the Subharti Dental College, Meerut. Each patient displayed an interproximal intrabony defect in a posterior tooth which was evident radiographically and which manually probed equal to or more than 6mm.

Following patient selection and informed consent, each patient was given initial periodontal therapy on an individual basis including instructions in proper oral hygiene techniques, scaling and root planing. During a 1 month follow up period, additional instructions and re-enforcement of oral hygiene was provided according to individual needs.

¹Corresponding author

RESULTS

The study group comprised of 20 patients, 10 males and 10 females in the age group of 25-60 years. At the start of the study the patients were demonstrated the brushing technique and other oral hygiene procedures. At baseline the OHI-S were taken. After that scaling and root planning were performed and patients were counselled and instructed for oral hygiene practices. The patients were recalled after 1 month, 3 months and 6 months respectively to assess the OHI-S (Table 1, 2).

DISCUSSION

To understand the ramifications of ineffective tooth cleaning, one must consider the fundamental relationship between plaque adhesion to a tooth's surface, plaque growth and maturation and the potential consequences of these events when left uncontrolled. Plaque microorganisms have a strong propensity to adhere to roughened surfaces, spaces between the teeth and pits and fissures (Fischman et al., 1975)

The rapidity with which microorganisms aggregate and colonize in these vulnerable niches presents a

formidable challenge to their removal. Dietary habits, eating frequency and food sugar content are factors that determine microbial growth. Aside from locations that present opportune growth areas, the adhesive nature of plaque and its growth rate can cause even a smooth surface of a tooth to be rapidly covered with microorganisms adjacent to papillae that did not bleed. Undisturbed proximal plaque can cause localized gingivitis within a few days. Over time, tissue fluid, exudate and chronic capillary blood flow impairment create conditions under which microbes thrive. The ultimate effect of this activity in or at the gingival junction is to further cascade tissue damage (Attstrom 1988).

Caton JG1988 concluded that scaling and root planing were necessary to reduce apical inflammation and that oral hygiene measures, unless specifically site-directed, were frequently ineffective in reducing bacterial plaque from the apical regions of interdental pockets. Careful analysis of bacterial plaque above the gingival margin suggests that they can be different in composition and functional activity. Dextrans provide the plaque with cohesiveness and are thought to bind to receptor sites of the

Table 1: OHI-S scores in the first group pre operative at baseline and post operative at the interval of one month, three months and six months

S. No.	Pre operative	Post operative		
	Baseline	1 month	3 months	6 months
1	2.3	1	0.34	0.34
2	2	1.66	1	1
3	2.33	1	1	1
4	2	1.4	1	1
5	2	1.66	1.66	1.66
6	2	1	1	1
7	2	1.6	1.6	1
8	1	0.6	0.6	1
9	3.1	1.3	1	1
10	2	1	0	1
Mean± standard deviation	2.07 ± 0.50	1.22±0.34	0.92 ±0.50	1±0.3

Table 2: OHI-S scores in the second group pre operative at baseline and post operative at the interval of one month, three months and six months

S. No.	Pre operative	Post operative		
	Baseline	1 month	3 months	6 months
1	3.4	1.8	1	1
2	1.9	1.7	1.7	1.5
3	2	1.66	1	1
4	2	1	1	1
5	2	1	1	0
6	2	1	1	0
7	2	1	1	0
8	1.5	0.6	1	1
9	2	1	0.6	0.6
10	2	1	1	1
Mean± standard deviation	2.08±0.48	1.17±0.38	1.03±0.26	0.71±0.53

protein film acquired by the tooth. The plaque lipids may play a role in early plaque calcification. Calcium in maturing plaque has the potential to fuse dead bacteria to the acquired pellicle, making its physical removal more difficult. The disease process associated with plaque bacteria is not always well defined.

Kaldahl et al. 1990 assessed gingival bleeding and supragingival plaque in a group of 75 subjects on a periodontal maintenance program. They concluded that subgingival host response activity, was a predictor of future attachment loss and thus it is prudent to encourage both personal and professional monitoring of the health status of the oral cavity.

Keyes et al., 1978 proposed that one aspect of oral care maintenance should encompass microbiologically modulated periodontal therapy of gingival pockets and patient compliance with an oral hygiene regimen. Implicit in that proposal is the training of the dental professional in the techniques required to collect samples of subgingival plaque and to recognize evidence associated with the active periodontal disease process.

The improvement in mean OHI S score in the present study support the observed treatment effects obtained under a strict plaque control regime. Cortellini et al 1993 explained that the long term clinical trials have in fact demonstrated that good clinical results can be obtained and maintained over time only if an optimal plaque control regimen is instituted. Conversely, deterioration of the root hygiene levels result in impairment of obtained therapeutic effect. It is in confirmity with various studies (Dahlin C1988)

CONCLUSION

The armamentarium necessary to help control dental plaque is the use of effective agents and devices and the awareness of the potential for plaque to become an oral health problem. From such knowledge comes commitment. Some of the tools to achieve control are in place: oral hygiene products, dentifrices, mouth rinses, oral cleaning aids and the toothbrush. A cleaning device must be used effectively on a daily basis to disrupt plaque growth.

Toothbrush studies have reported that superiority can be achieved by modifying toothbrush design. In effect, the best toothbrush is the one being properly used. Behavior

modification is a problem of considerable magnitude. Investigators have shown that supervised oral hygiene programs can affect oral health. Techniques used to motivate children in the classroom also have the potential to improve oral health. The time, cost and even the concern of most communities have labeled these important approaches to behavior modifications as impractical. The burden of cost to the individual and the community suggests that oral hygiene, involving dental educational programs and even classroom supervised tooth brushing on a daily basis, can profoundly effect oral health and cost. Until a practical approach of achieving change can be implemented, gum disease will likely retain its epidemic proportions among world populations.

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