**Effect of Smoking on Clinical Attachment Level Profile - A Cross Sectional Study**

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**ABSTRACT**

Aim: To compare the patterns of clinical attachment loss and the distribution of pockets with probing depth more than 5mm in smokers, non-smokers and former smokers. Materials and Methods: The sample population consists of 150 randomly selected patients reported to the department of Periodontology at H K E’s S N Dental College with chronic periodontitis. The patients were divided into three groups based on their smoking habits (smokers, non-smokers and former smokers). Plaque Index, Gingival Index, and pockets with probing depth ≥5mm, Community Periodontal Index were measured and were analyzed statistically using SPSS V16. Results: The mean PI scores for smokers; non-smokers and former smokers were 2.2017, 2.0988 and 1.8143 respectively. Mean gingival index scores for smokers -1.67, Non smokers -1.765, Former smokers 1.56. Smokers had more amounts of clinical attachment loss and more number of teeth with pockets when compared to non-smokers and former smokers. Conclusion: Smokers had more amount of periodontal tissue destruction when compared to non-smokers and former smokers.

Keywords: Periodontal Attachment Loss; Periodontal Pocket; Smoking

**Introduction**

Tobacco smoking is one of the major forms of tobacco use in the world. According to the WHO, in 2001, there were 1.1 billion smokers. This equates to approximately 1/3 of the world’s entire population over 15 yrs of age and represents an enormous global health problem. Tobacco use is directly related to a variety of medical problems including cancer, low birth weight, pulmonary and cardiovascular diseases. Smoking is known to be one of the most significant risk factors in the development and progression of periodontal disease. In India, studies by Rani and colleagues showed that 30% of the population 15 years or older, 47% men and 14% of women either smoked or chewed tobacco, which translates to almost 195 million people (154 million men and 41 million women) in India. Studies have shown that smokers have greater alveolar bone loss, greater attachment loss, deeper periodontal pockets and more supra gingival calculus than non-smokers, but less bleeding from periodontal sites. Smokers appeared to have similar levels of plaque accumulation as non-smokers. This study was conducted to compare the patterns of clinical attachment loss and the distribution of pockets with probing depth more than 5mm in smokers, non-smokers and former smokers.

**Materials and Methods**

A cross sectional study was conducted among 150 randomly selected patients reported to the department of periodontics HKE’s SN Dental College, who were diagnosed with chronic periodontitis. Ethical clearance for the study was obtained from the ethical committee of the institution prior to taking the informed consent from all participants. The study sample consists of 33 females and 117 males patients diagnosed with chronic periodontitis. Patients with any known systemic condition and were undergoing systemic antibiotic therapy during the past three months and patients undergone periodontal therapy during the last three months were excluded during the sample selection. Based on the history the patients were divided into three groups according to their smoking status, i.e., smokers, non-smokers and former smokers.

Patients were classified as a non-smoker if he/she didn’t have any history of smoking. (Group A), smokers if they have been smoking for at least one year (Group B) and as past smokers if they had a history of smoking and stopped smoking for past one year. (Group C).

All patients were clinically examined for Plaque Index (Silness P and Loe H. 1964), Gingival Index (Loe and Silness - 1963) and pockets with probing depth ≥5mm, Community Periodontal Index. A relevant smoking history of each participant regarding duration of smoking and number of cigarettes per day was taken for smokers and the above-mentioned indices are done in the selected patients. SPSS V 16 was used to analyze the data collected.

**Results**

The study sample consists of 33 females and 117 males. The average age of the sample population was 28 years (SD 12.34). The mean PI scores for smokers, non-smokers and former smokers were 2.2017, 2.0988 and 1.8143 respectively. Mean gingival index scores were, Smokers (1.67), Non smokers (1.765) and Former smokers (1.56). Presence or absence of Suppuration was also noted in the present study. The results indicate that smokers on average had more number of teeth with suppuration when compared to non-smokers and former smokers. In the present study an attempt was made to find the intra oral distribution of periodontal pockets with probing depth ≥ 5mm. In the lower molar region, on average smokers had more number of teeth with probing depth ≥ 5mm when compared to non smokers and former smokers. It was noted that smokers had 1.58 teeth with pockets when compared to non-smokers with 1.27 teeth and former smokers with an average of 0.50 teeth (Graph 1). These findings were statistically significant. Based on the CPTIN Score it was noticed that among the three groups, smokers had more prevalence of attachment loss when compared to non-smokers and former smokers.
Discussion

Plaque index scores of this study was in accordance to the previous studies in literature that smokers have more amount of plaque when compared to non smokers. In general smokers had more amount of plaque when compared to non smokers. In the present study the Gingival Index scores of smokers were more compared to other two groups similar to previous observations. Our data revealed that smokers had more number of teeth with supputation when compared with non-smokers and former smokers. This effect may be due to the various local effects of tobacco smoke on the periodontal tissues and effects of smoking on the inflammatory cells in the body.

The presence of periodontal pockets and its distribution shows a statistically significant relation between these three groups in the lower molar region and a mild difference was observed in the upper premolar region which was not statistically significant. These results are in contrast to the earlier literature. This study data analysis inferred that smokers had more number of pockets when compared to non-smokers. Smokers had more prevalence of pockets in the maxillary anterior, premolar and molars regions compared to non-smokers. There was statistically significant difference in the lower molar region. The results of clinical attachment level by CPI loss of attachment index are in agreement with the earlier studies where in it was found that clinical attachment loss was more in smokers when compared to non-smokers and former smokers. This effect may be due to the various local effects of tobacco smoke on the periodontal tissues and effects of smoking on the inflammatory cells in the body.

Smokers had more number of teeth with pockets ≥5mm in the maxillary and mandibular molar regions, and this is in agreement with the observations from a study done to find the relation between smoking and periodontal health, in particular, furcation involvement in molar teeth. The results of clinical attachment level by CPI loss of attachment index are in agreement with the earlier studies where in it was found that clinical attachment loss was more in smokers when compared to non-smokers and former smokers. In the present study the results indicate that when compared to smokers and non smokers, former smokers have better Plaque Index and Gingival Index scores, smokers have more number of teeth with pocket probing depth greater than or equal to 5mm, and that smokers have more amount and prevalence of attachment loss compared to non smokers and former smokers.

The results of the study indicate that smoking cessation has a good effect on the periodontal status of the subject population. Smoking cessation also has beneficial effects on the general health. Policies by the government should encourage the public in this regard. Smoking ban in public places implemented from October 2nd 2008 by the government of India under the ‘Cigarettes and Other Tobacco products Act 2003’ will lead to reduction in actual smoking and relief to the passive smokers. The five A technique for smoking cessation can be a valuable tool in motivating the smoking patients (ask- systematically, identifying the tobacco use status of all patients, advise - strongly advising all who use tobacco products to stop, assess - evaluating the patient’s willingness to quit, assist - offering assistance in quitting, arrange - following up on the patient’s cessation efforts, especially early in the process). Thus, dentists have an important role in motivating the patient to stop smoking.

Conclusion

In conclusion, smokers had more amount of periodontal tissue destruction when compared to non smokers and former smokers. Dentists could motivate the patient to stop smoking during their visit for dental treatments.

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References


Graph 1. Graph showing mean values of plaque index, Gingival index and periodontal Pocket depth in each group
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