Assessment of alveolar bone loss and measurement of periodontal status by clinical and digital radiographic analysis in smokers and non-smokers. (Comparative study)

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Abstract

Background. The role of smoking in periodontal disease has been extensively studied for many years. Clinical and epidemiological studies build up an increasing amount of scientific data which support the concept that tobacco use is an important risk factor that has a clear association with the prevalence and progression of periodontal disease**.**

Objectives. The aim of the present study was to compare the periodontal health status and alveolar bone loss by using clinical and digital radiographic analysis between smokers and non-smokers.

Materials and methods. Total samples composed of fifty participants, twenty five smokers (mean age of 43.48 ± 6.72 years) and twenty five non-smokers (mean age 44.28 ± 7.21 years). The study was cross sectional, all periodontal parameters and radiographic analysis were done in the same visit. All periodontal parameters: plaque index (PLI), gingival index (GI), bleeding on probing (BOP), probing pocket depth (PPD) and clinical attachment loss (CAL) were recorded for all teeth except the third molar which was excluded while the digital radiographic analysis was recorded from the distal surfaces of first premolars to mesial surfaces of second molars of upper and lower right quadrants.

The system included in the study was charge-coupled device (CCD) digital intra oral radiography by using digital bitewing radiograph, the unit of measurement was from cemento-enamel junction to alveolar crest distance (CEJ-Ac distance) per site in millimeters.

Results. The results obtained were highly significant difference for PLI between group I (smokers group) and group II (non-smokers group). Although there was non significant difference of means of gingival index between group I and group II, there was a highly significant difference in the percentage of sites that bleed on probing (BOP) between both groups.

We use a scale for ease of estimation based on increased pocket depth for probing pocket depth and the same method for clinical attachment loss parameters, it involve the scales (0,1,2,3) for PPD and scales (1,2,3,4) for CAL.

Although there was increase in the total number in all scales of PPD, CAL (scales 1,2,3) for PPD and (scales 2,3,4) for CAL in smokers than non-smokers, there was a highly significant difference only in scale 1 PPD and scale 2 CAL and non significant differences in all other scales between both groups.

There was a significant difference in the general mean CEJ-Ac distance between both groups with higher mean CEJ-Ac distance in

smokers group than non-smokers group.

Although the intragroup comparison of mean CEJ-Ac distance between upper posterior right side and lower posterior right side of both groups separately showed that there was non-significant difference, there was a significant difference in the mean CEJ-Ac distance of upper posterior right sides between both groups and in lower posterior right sides between both groups too.

Conclusions. In conclusion, smokers group showed a highly significant difference in PLI, BOP, scale 1 PPD and scale 2 CAL compared to non-smokers group , significant difference in the general mean of CEJ-Ac distance, mean CEJ-Ac distance of upper posterior right side and lower posterior right side between both groups and non significant difference in GI, scales 0,2,3 PPD, scales 1,3,4 CAL and in intragroup comparison of means of CEJ-Ac distance between upper posterior right side and lower posterior right side of both group separately.

Finally, smokers group revealed more periodontal tissue destruction and bone loss than non-smokers group by clinical examination and digital radiographic analysis.