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# *Bone changes around osseointegrated dental implants in smokers and non-smokers*

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**Objectives:** The present study aims to investigate alveolar bone changes around single Straumann wide-neck dental implants in smokers and non-smokers.

**Methods:** 10 smokers (>10 cigarettes per day) and 10 non-smokers were recruited. The patients displayed stable periodontal conditions and replacement of one molar using a wide-neck Straumann dental implant was indicated. Full-mouth clinical data were registered at baseline and along with the clinical data at six sites of each implant were further recorded at 3, 6, and 12 months after functional loading of each implant. Standardized periapical radiographs of each implant were taken at 2, 4, 6, 8 weeks after implant surgery and then every 6 months after functional loading, which commenced at 8 weeks after placement. The radiographic images were then scanned into a computer. The images were analyzed by a Digital Subtraction Radiographic software based on the Linux system for detection of vertical bone changes and Computer Assisted Densitometric Image Analysis (CADIA) was performed to detect bone density changes.

**Results:** There were no statistically significant differences in clinical parameters, full-mouth and at implants, between groups at baseline, 3, 6, and 12 months (P>0.05 Mann-Whitney). There were no statistically significant differences between smokers and non-smokers in mesial (m) and distal (d) vertical height changes at 12 months- smokers' m -0.055mm, d 0.001mm, non-smokers' m 0.100mm, d 0.128mm, or in CADIA values- smokers' m 1.86, d -8.32, non-smokers' m 8.376, d 0.873 around dental implants after functional loading (P>0.05 Mann-Whitney). No implant was lost in either group up to one year after functional loading.

**Conclusion:** Single molar-tooth replacement using Straumann dental implants is as successful in terms of bone remodeling around the implants and implant survival in smokers as in non-smokers up to one year after functional loading. This study was supported by HKU CRCG grant no. 10205961.

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