



Radiographic alveolar bone loss 5-12 years after periodontal therapy.

D.K.C. Ng, W.K. Leung, L.J. Jin, E.F. Corbet*
(Faculty of Dentistry, The University of Hong Kong)



INTRODUCTION

Periodontal treatment aims to increase the functional longevity of dentitions. It is generally recognised that continued regular supportive periodontal care (SPC) is an important component of overall periodontal treatment. In a teaching clinic situation, it may not always be possible to offer regular SPC recalls to all patients who have undergone active treatment for chronic periodontitis. Within our clinic some treated patients are therefore given a very clear and detailed account of the benefits of regular SPC and of the possible consequences of a lack of SPC but are discharged with encouragement to make individual arrangements for SPC with oral health care providers in the community. A long-term aim of this research is to identify those chronic periodontitis patients who would be most likely benefit to the greatest extent in terms of tooth retention and maintenance of alveolar bone from regular SPC recalls in a teaching clinic situation, in which it possible to offer SPC to some but not all treated patients.

OBJECTIVE of this component of the study:

To identify factors associated with

- further obvious radiographically detected alveolar bone loss
- around surviving teeth
- in Chinese patients previously treated (5-12 years prior to recall) for chronic periodontitis
- by students of the Periodontology Clinic of the Faculty of Dentistry, University of Hong Kong in the Prince Philip Dental Hospital (PPDH),
- for whom regular SPC had not been arranged.

METHODS

Subjects

439 patients, treated for chronic periodontitis by final year dental students, having the following characteristics:

- Chinese
- in good health at time of active treatment
- not then pregnant
- pre-treatment panoramic oral radiograph available
- had received no concurrent or known subsequent orthodontic treatment
- whose final periodontal documentation showed
 - no PPD > 5 mm
 - BOP ≤ 20%
 - no more than 5% of sites with PPD = 5 mm
- no regular SPC in PPDH
- active treatment completion ≥ 5 years before

From this pool, 100 patients were selected and invited to attend for:

- questionnaire interview by a trained interviewer,
- panoramic oral radiographic examination,
- clinical periodontal examination (teeth, plaque, BOP, PPD, denture status).

Radiographic Scoring

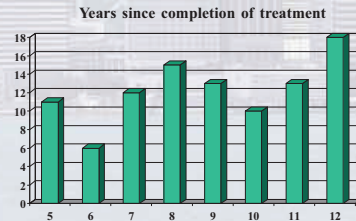
- one scorer (blinded to questionnaire responses)
- Schei ruler (Schei et al. 1959)
- proportion of root length in bone at mesial and distal aspect of each tooth evident on both pre-treatment and recall radiographs
- bone score – sum of bone scores for all teeth evident on both radiographs
- change in bone score (> 50 to allow for likely measurement error) from pre-treatment radiograph to recall radiograph

Statistical Analysis

Multiple linear regression between change in bone score and selected variables from the questionnaire data and the clinical examination.

RESULTS

96 of the 100 recall subjects fulfilled all criteria.



SPC History

93 (of the 96) had received dental treatment since completion of periodontal therapy but none had complied with the advice to receive regular SPC.

Smoking History

10 (of the 96) were current smokers at the recall. The mean smoking-pack-years of smokers was 23.

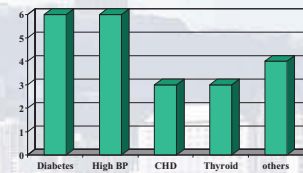
Removable Partial Denture Wearing

36 (of the 96) wore removable partial dentures (19 in one arch only, 17 in both arches) at recall.

Medical History

All 96 were systemically healthy at the time of active treatment (an inclusion criteria). 20 (of the 96) reported a history of onset of systemic disease(s) since treatment completion.

Systemic diseases among 20 of the 96 since treatment

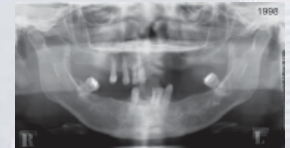
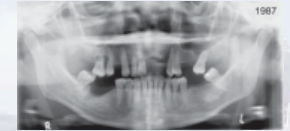
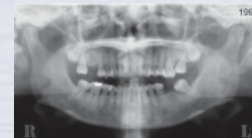


Distribution of Subjects by Bone Score Changes

Δ Bone Score	Number Subjects	Cumulative Percentage
+50 ← 0 → -50	65	68
-51 → -100	17	85
-101 → -150	7	93
-150+	6	100

Multiple Linear Regression Model for Change in Bone Score

	Coefficient (S.E.)	p-value
Intercept	-28.989	
Years since treatment	-19.854 (5.165)	< 0.001
Smoking pack-years	-1.306 (0.393)	0.001
Dentures (Non-wearer vs wearer)	25.551 (8.062)	0.002
Systemic state (Healthy vs disease)	22.950 (9.449)	0.017



DISCUSSION

Only obvious alveolar bone loss evident on panoramic oral radiographs around surviving teeth was analysed in this component of the study. In view of possible measurement error a change in bone score > 50 was set as the threshold indicating bone loss. No account was taken for tooth loss. No 'dummy' scores were entered for each tooth lost. Thus, some of the 2/3 of subjects considered to have stable bone levels 5-12 years after treatment may have experienced further periodontal destruction resulting in tooth loss. Tooth loss has been analysed separately.

CONCLUSIONS

From among many potential variables -

- time elapsed since treatment
 - continued smoking
 - partial denture wearing
 - systemic ill-health since treatment
- were found to be associated with evident alveolar bone loss around surviving teeth 5-12 years post-treatment in subjects not offered, and themselves not availing of, SPC.

REFERENCE

Schei O, Waerhaug J, Lovdal A & Arno A. (1959). J Periodontol; 30:7-16.

ACKNOWLEDGEMENT

Supported by Hong Kong Research Grant Council, RGC/HKU7331/00M.