



Healing Response after Non-surgical Therapy in Smokers with Chronic Periodontitis



C.P. WAN*, W.K. LEUNG, E.F. CORBET
Faculty of Dentistry, The University of Hong Kong

Background

- Smokers have increased risk of periodontal disease compared to non-smokers (Grossi et al 1994; Tomar & Asma 2000).
- It has also been shown that smokers display less favorable treatment response after non-surgical periodontal therapy (Preber & Bergstrom 1986).
- However, limited studies have been performed on the effect of smoking on healing response after non-surgical periodontal therapy in Chinese subjects.

Aim

This longitudinal study aimed to compare the 6-month healing response after non-surgical periodontal therapy in male Chinese smoking periodontitis patients with that in non-smoking periodontitis patients.

Material and Methods

Selection of subjects

- 34 systemic healthy male subjects
- Presenting with untreated moderate-to-severe periodontitis
- 17 were smokers (≥ 10 cigarettes/day), mean age 45.8 ± 8.5 years; and 17 were non-smokers, mean age 44.9 ± 9.4 years.

Selection of test teeth for GCF sampling

- 4 sites from each patient
- Presence of PPD 5mm or above
- No un-restorable carious lesions
- No obvious cracks involving the roots or crowns
- Responsive to electric pulp testing

Clinical parameters

- Plaque (PI%)
- Bleeding on probing (BOP%)
- Probing pocket depth (PPD)
- Probing attachment level (PAL)
 - PPD and PAL were taken using a Florida Probe® and custom made acrylic stent for reference guide

GCF sampling

- GCF samples were collected with standard filter GCF strip (Periopaper® GCF strips, IDE Interstate, Amityville, NY) inserted into the pockets until mild resistance felt and left for 30 seconds
- GCF volume was measured immediately by using a GCF meter (Periotron 8000, IDE Interstate, Amityville, NY)

Periodontal therapy

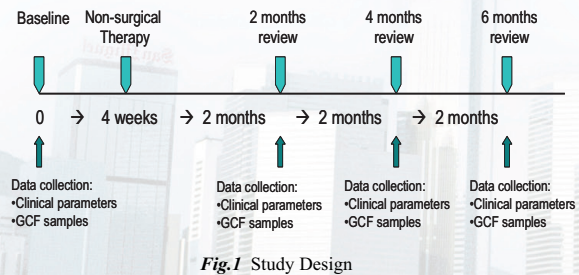
Non-surgical periodontal treatment

- Oral hygiene instruction (OHI), scaling and root planing using ultrasonic and hand instruments under local anesthesia
- Provided by a group of experienced dental hygienists over 3-to-4 visits within a 4-week period

Recall appointments

- OHI reinforcement, debridement and prophylaxis was provided as required at 2 and 4 months.

Study design (Fig.1)



Statistical analysis

Differences between groups and between time-points within groups were tested by Mann-Whitney U test and Wilcoxon signed rank test respectively. The significance level was set at $p < 0.008$ to account for multiple comparisons.

Results

- All subjects completed the study. Cigarette smoking history is summarized in *Table 1*

Table 1 Smoking status of smokers

	Mean (Standard Deviation)
No. of cigarettes/ day at baseline	17.6 (5.3)
No. of cigarettes/day at 6 months	16.4 (4.5)
Years of smoking	23.2 (9.7)

- All clinical parameters improved in both groups compared to baseline (*Table 2*)

Table 2 Clinical parameters

	Smokers		Non-smokers	
	Baseline	6 months	Baseline	6 months
PI%	76.5 (10.6)	26.8 (16.7)*	85.0 (10.4)	37.3 (19.7)*
BOP%	52.1 (10.9)	23.4 (9.7)*	71.0 (21.3)#	43.9 (14.5)**
PPD (mm)	2.8 (0.3)	1.9 (0.2)*	2.5(0.6)	1.6 (0.1)**
PAL gain (mm)	-	0.2 (0.3)	-	0.4 (0.6)
% of PPD ≥ 5 mm	9.3 (5.7)	2.8 (2.1)*	7.2 (6.5)	0.5 (0.8)**

* Significant difference from baseline ($p < 0.008$)

Significant difference between groups ($p < 0.008$)

- For sites with initial PPD ≥ 5 mm, non-smokers showed greater PPD reduction compared to smokers (5.6mm to 3.3mm in smokers vs 5.3mm to 2.5mm in non-smokers, $p < 0.008$) (*Fig.2*)

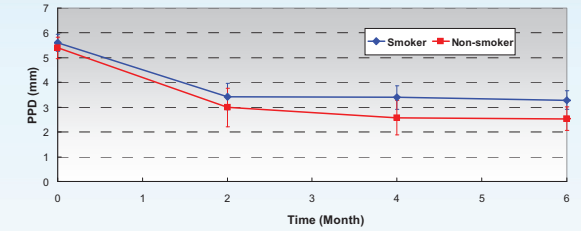


Fig.2 PPD in sites with initial PPD ≥ 5 mm

- GCF volume was significantly reduced at 2, 4 and 6 months compared to baseline ($p < 0.008$), but with no difference between groups (*Fig. 3*)

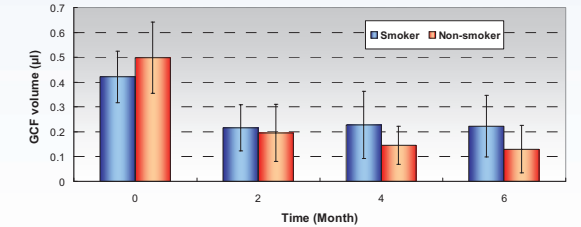


Fig.3 GCF volume

Conclusions

- In response to non-surgical treatment, smokers exhibit more pockets ≥ 5 mm and significantly lesser PPD reduction compared to non-smokers.
- The present study indicates that the 6-month healing response after non-surgical periodontal therapy was generally less favorable in male Chinese smoking periodontitis patients.

References

- Grossi et al. (1994) *J Periodontol.* 1994; **65**(3):260-7
- Tomar & Asma (2000) *J Periodontol.* 2000; **71**(5):743-51
- Preber & Bergstrom (1986) *J Clin Periodontol.* 1986; **13**(4):319-23

Acknowledgement

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