



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).
- Chinese subjects have been shown to display marked gingival recession contributing to pocket reduction in response to mechanical periodontal therapy (Tong et al. 2003).

Aim

This longitudinal study aimed to compare the 12-month healing response after non-surgical periodontal therapy in male Chinese smoking periodontitis patients with that in non-smoking periodontitis patients with particular reference to pockets.

Material and Methods

Selection of subjects

- 30 systemic healthy male subjects.
- Presenting with untreated moderate to severe periodontitis.
- 17 were smokers (≥ 10 cigarettes/day), mean age 46.8 ± 7.0 years; and 13 were non-smokers, mean age 44.1 ± 6.7 years.

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.

Selection of test sites 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.
- Tooth responsive to electric pulp testing.

GCF sampling

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

Periodontal therapy

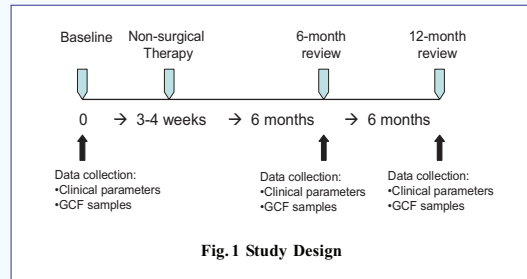
Non-surgical periodontal treatment

- 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 6 and 12 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 12-month	16.4 (4.5)
Years of smoking	23.2 (9.7)

	Smokers			Non-smokers		
	baseline	6 months	12 months	baseline	6 months	12 months
PI%	77.3 (11.2)	25.3 (13.0)*	34.0 (16.4)*	84.9 (8.9)	31.5 (18.6)*	25.8 (15.8)*
BOP%	50.0 (10.0)	21.4 (6.4)*	24.2 (9.5)*	65.4 (21.5)*	41.0 (15.5)*#	25.0 (11.5)*
PPD (mm)	2.8 (0.3)	1.9 (0.2)*	1.9 (0.3)*	2.5 (0.5)	1.7 (0.2)*#	1.7 (0.3)*
PAL gain (mm)	-	0.2 (0.2)	0.3 (0.5)	-	0.2 (0.5)	0.4 (0.5)
% of PPD ≥ 5 mm	10.6 (6.9)	2.8 (2.1)*	3.0 (2.2)*	8.6 (5.4)	0.8 (1.2)*#	1.2 (1.8)*#

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

- Pocket reduction of sites with initial PPD ≥ 5 mm was significantly less in smokers at 6 months (2.2 ± 0.4 mm vs. 2.8 ± 0.6 mm, $p = 0.001$) but not at 12 months (2.4 ± 0.4 mm vs. 2.9 ± 0.6 mm, $p = 0.016$). (Fig. 2).

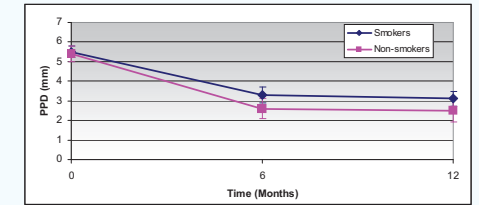


Fig. 2 Δ PPD in sites with initial PPD ≥ 5 mm

- GCF volume was significantly reduced at 6 and 12 months compared to baseline for both groups but the reduction in smokers was less. (Fig. 3).

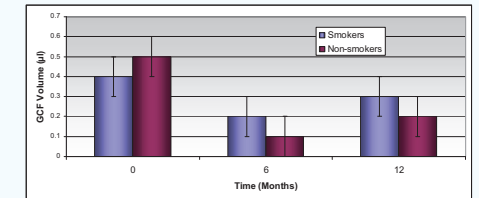


Fig. 3 GCF volume

Conclusions

- The present study indicates that the 12-month healing response after non-surgical periodontal therapy was generally less favorable in male Chinese smokers than never smokers.
- Smokers was found to have more pockets than non-smokers after non-surgical periodontal therapy.

References

- Grossi et al. (1994) *J Periodontol* 65:260-7.
Preber & Bergstrom (1986) *J Clin Periodontol* 13:319-23.
Tomar & Asma (2000) *J Periodontol* 71:743-51.
Tong et al. (2003) *J Periodontol* 74: 1582-8.

Acknowledgement

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