R-5. The Effect of Splinting with Concomitant Root Planing : A Clinical and Digital Subtraction Radiographic Study

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Aim of the present study

Splinting is widely used as adjunctive therapy in periodontal treatment, and digital subtraction radiography is a new method which can resolve the problems of the conventional radiography.

This study was performed to compare the effects of root planing only with those of root planing with concomitant splinting clinically and radiographically, to compare information from digital subtraction and from conventional radiography with clinical recordings for the assessment of bone changes, finally to investigate the efficacy of spliniting therapy.

Materials & Methods

Study design and patient selection 20 moderate to severely advanced adult periodontitis patients were included in this study. After 2 weeks from screening visit, with randomized prospective parallel mouth design, 10 patients were treated by RP only, and 10 patients were treated by RP with splinting. Clinical and radiographic measurement were taken at baseline, 6 months, and clinical measurement was taken at 3 months additionally.

Clnical procedure Clinical parameters used in this study were plaque index(PI), gingival index(GI), position of gingival recession(REC), probing pocket depth(PPD), clinical attachment level(CAL), clinical attachment gain(CAG), bleeidng on probing(BOP), tooth mobility(Mob., by Miller, Periotest).

Radiographic procedure Radiographic assessment consisted of conventional radiographic(CR) method and digital subtraction radiographic(DSR) method. In digital subtraction radiographic method, images were acquisited by Digora imaging system, and processed on Emago program.

Results

1. Baseline Description

No significant differences in baseline characteristics were observed comparing the test with the control group.(Table 1)

2. Clinical Results - Table 2

3. Radiographic Results

The relationship between the clinical and the radiographic assessments at the 6-months is shown in Table 3. The correlation between the clinical and conventional radiographic assessments was low(r=0.11, p=0.64). The correlation between the clinical and digital subtraction assessments was higher(

Table 1. Baseline Characteristics(mm) ; data are expressed as means(±standard deviations)

	RP	RP+splint	P
PI	0.93(±0.42)	0.89(±0.33)	0.792
GI	0.73(±0.30)	0.86(±0.33)	0.662
PPD	4.09(±0.37)	4.14(±0.93)	0.662
REC	3.63(±1.86)	3.39(±2.03)	0.792
CAL	7.72(±1.49)	7.53(±2.16)	1.000
BOP	0.80(±0.45)	1.00(±0.00)	0.662
Mob(Periotest)	30.40(±12.90)	31.17(±12.97)	0.931
Mob(Miller)	2.20(±0.45)	2.33(±0.52)	0.792

Table 2. Comparison of Clinical Measurements(mean±standard deviation in mm) between the test and the control group

	RP			RP+splint		
	baseline	3months	6months	baseline	3months	6months
PI	0.93(±0.45)	0.63(±0.42)	0.50(±0.17)*	0.73(±0.30)	0.63(±0.14)	0.50(±0.48)
GI	4.09(±0.37)	3.86(±0.37)*	3.45(±0.81)*	3.63(±1.86)	3.77(±1.74)	4.10(±2.11)
PPD	7.72(±1.49)	7.62(±1.39)	7.56(±2.18)	0.80(±0.45)	0.40(±0.55)	0.40(±0.52)
REC	30.40(±12.90)	-	25.80(±9.42)	2.20(±0.45)	-	1.80(±0.41)
CAL	0.89(±0.33)	0.72(±0.36)	0.63(±0.42)	0.86(±0.52)	0.58(±0.44)	0.56(±0.33)
BOP	4.13(±0.93)	3.52(±0.97)*	3.17(±0.74)*	3.39(±2.03)	3.95(±2.19)*	4.28(±1.93)*
Mob(P)	7.53(±2.16)	7.46(±2.12)	7.44(±1.99)	1.00(±0.00)	0.33(±0.52)*	0.33(±0.47)*
Mob(M)	31.17(±12.97)	-	-26.67(±8.60)*	2.33(±0.52)	-	1.93(±0.37)

Table 3. Relationship between clinical attachments and assessment of bone changes(6months)

		RP Clinical			RP+splint Clinical			total Clinical		
		AG	UC	AL	AG	UC	AL	AG	UC	AL
Conventional radiograph	BG	4	-	-	1	-	1	5	-	1
	UC	-	-	-	-	-	-	-	-	-
	BL	-	-	1	2	-	2	2	-	3
Digital subtraction	BG	1	-	-	1	-	1	2	-	1
	UC	3	-	1	2	-	-	5	-	1
	BL	-	-	-	-	-	2	-	-	2

r=0.26, p=0.32)(by Kendall's correlation analysis).

For the teeth exhibiting a gain of clinical attachment, the mean gain was 0.26mm at the 6 months examination. The mean bone gain for the teeth exhibiting bone gain on conventional radiographs was 0.22mm and the mean bone gain for the teeth exhibiting bone gain on digital subtraction images was 0.88mm

Conclusion

1. There were changes in clinical parameteres at 3 months, with significant changes in PPD, REC, BOP($p<0.05$) with no significant differences between two groups($p>0.05$).
2. There were also changes in clinical parameteres at 6 months, with significant changes in PPD, REC, BOP, PI,($p<0.05$) with no significant differences between two groups($p>0.05$).
3. According to these results, we surmised that splinting has no additive effect on Root Planing in periodontal treatment.
4. Kendall's correlation analysis shows that the correlation between the the clinical and the CR assessments low and did not differ significantly from zero($r=0.110$, $p=0.639$) and that there was higher correlation between the clinical and the DSR assessments($r=0.257$, $p=0.315$) indicating that bone changes following periodontal treatment correlated better with the clinical measurements of attachment gain when assessed by DSR than when assessed by CR.