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Research Article

CLINICAL EFFICACY OF FULL-MOUTH SCALLING AND ROOT PLANING AGAINST QUADRANT WISE SCALLING AND ROOT PLANING IN THE TREATMENT OF CHRONIC PERIODONTITIS: A BLINDED, RANDOMIZED CLINICAL TRIAL

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ABSTRACT

Aim: To compare the clinical benefit of full-mouth(FM-SRP) debridement against multiple session (MS-SRP) debridement in patients with chronic periodontitis up to 3 month, in a randomized clinical trial.
Materials and Methods: Sixty subjects were randomly assigned to FM-SRP and MS-SRP groups. At baseline and after 3 months, probing pocket depth (PPD), and plaque index (PlI) and bleeding on probing (BoP) were recorded.
Results:- There was a reduction in the levels of probing pocket depth but no statistically significant difference between treatment groups in intervals of 30, 60 and 90 days. For bleeding following pocket probing, was found statistical difference for 30 and 60 days, where the groups of full-mouth showed more reduction than conventional therapy. But in 90 days, there was no significant difference between groups.
Conclusion: At the evaluation 90 days after treatment, no statistical difference was found between the two periodontal therapies

INTRODUCTION

Chronic periodontitis is the most common form of periodontitis with about 80% of prevalence.[1-3] The periodontal disease is an opportunistic infection associated with the formation of bacterial biofilms on the tooth surfaces. This etiological factor acts through direct mechanisms: destruction caused by lytic enzymes and cytotoxins produced by bacteria, and indirect: periodontal destruction by the inflammation.[4]

The biofilm is considered the primary agent in the aetiology of periodontitis. However, only the biofilm is not enough to determine the disease, genetic and host (eg, oral hygiene stress, diabetes, and smoking) may also be present.[5] periodontal infections have a multi factorial etiology involving a susceptible host and the presence of periodontal pathogens.[6]

The chronic periodontitis has slowly progression and it can be classified in relation to the length (number of sites involved), as localized or generalized, and the severity (amount of insertion loss), as light, moderate and severe.[5-7]
The treatment aims to accomplish the removal of dental calculus and cement contaminated with toxins or microorganisms.[3] The scraping conventional instrumentation is performed by mechanical sextants or quadrants at intervals of one to two weeks, so that active treatment is complete in four to six weeks. In the periodontal therapy in a single session (full-mouth disinfection), a new approach suggested for the treatment of periodontal infections, Quirynen, *et al*.[8] proposed a model of disinfection treatment in one session performing Scaling Root and Planning (SRP) within 24 hours, supplemented with the use of Chlorhexidine (CHX) for two weeks. The dental calculus and cement contaminated can be removed by manual or ultrasonic debridement, and the studies show similar effectiveness in both approaches.[9-10] In a clinical evaluation for six months to evaluate manual and ultrasonic debridement the results were similar.[11] Other study demonstrated that a single session of full-mouth plus ultrasonic is a justified initial treatment approach that offers tangible benefits for the chronic periodontitis patient.[12]

So, the present study compared the clinical benefit of full-mouth ultrasonic debridement against partial-mouth ultrasonic debridement in patients with chronic periodontitis up to 3 months after therapy. This study tried to verify if full-mouth ul-

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trasonic debridement provides clinically relevant improvements in the periodontal treatment.

MATERIALS AND METHODS

Experimental design and patient selection

The study was carried out in the Department of dentistry and maxillofacial surgery SKIMS MC/H Bemina Srinagar. Ethical clearance was obtained for the study and a written informed consent was obtained from every patient before performing the test. After recording probing pocket depth (PPD)[13], bleeding on probing (BoP)[14], plaque index (PII)[15], presence of furcation lesions and medical history of the patient, an external examiner selected 60 patients who were eligible and fit the inclusion criteria. Patients diagnosed with chronic periodontitis, aged 25–75 years the sites with PPD ≥6mm were candidates for inclusion.

Patients were not admitted to the study if any of the following criteria were present: (1) smokers and former smokers who stopped <5 years ago, (2) use of local or systemic antibiotics 3 months before the study, (3) removable partial dentures, (4) pregnancy or lactation, (5) presence of systemic diseases requiring drug therapy and (6) periodontal treatment within the past 5 years. The patients were stratified for the two trained and experienced oral hygienists who performed the treatment.

The hygienists were instructed to start periodontal treatment in the maxillary right quadrant (test-quadrant), in order to obtain the highest level of operator blinding and the prevention of an operator bias. When the treatment was finished, a second independent person informed them whether they had to continue the treatment in the other quadrants (FM-SRP) or continue treatment in another session (MS-SRP), based on a computer-generated randomization table.

After 3 months the patients were examined by a periodontist. All study personnel was blinded to treatment assignment for the duration of the study.

Treatment

FM-SRP

The patients that were assigned to the FM-SRP protocol received a full-mouth supra and subgingival ultrasonic debridement in a 3-h single session. Treatment was performed under local anaesthesia on patient's request. Patients received standard oral hygiene instructions including tooth brushing and inter-dental plaque control by inter-dental brushes. At days 7 and 14 the oral hygiene instructions were reinforced.

MS-SRP

The patients assigned to the MS-SRP protocol received supra and subgingival ultrasonic debridement in three sessions of 1 h at 1-week intervals according to the protocol of the clinic. Treatment was performed under local anaesthesia on patient's request. The first quadrant was always treated in the first session. The rest of the dentition was divided in two equal portions and treated in the two consecutive sessions.

Clinical measurements

Before treatment and 3 months (3.5 months for the test-quadrant in the MS-SRP group) after completion of the treatment, clinical parameters were assessed by a blinded examiner. PPD to the nearest millimeter was assessed at six sites per tooth using a manual probe (UNC 15, Hu-Friedy Manufacturing Co.), and BoP (Van der Velden 1979) and plaque index (PII) (Silness & Lo¨e 1964) were recorded. According to the practice protocol, pockets measuring <3mm were considered healthy and not recorded.

Statistical analysis

The data analyses were performed using ANOVA (to PPD) and Kruskal Wallis (to Bop and PII). All differences were considered significant at $p<0.05$).

The SPSS 15.0 software package (SPSS Inc., Chicago, IL, USA) was used for data handling and statistical testing.

RESULTS

Tables 1 show the means and standard deviations of PPD, BoP and PII, respectively, in 30, 60 and 90 days of the two therapies, showing reduction of the clinical parameters in all periods, when compared with baseline measurements.

Table 1 Mean (standard deviation) of PPD (mm), Bop and PII (%) at different time intervals for both groups

	Groups	Initial	30 days	60 days	90 days
PPD	**FM-SRP**	6.37 ± 1.12	4.81 ± 1.43	4.96 ± 1.42	4.77 ± 1.43
	MS-SRP	6.27 ± 1.33	4.85 ± 1.60	5,01 ± 1.42	4.79 ± 1.64
BoP	**FM-SRP**	85.49 ± 21.44	29.44 ± 22.75	31.40 ± 28.21	14.80 ± 22.30
	MS-SRP	89.23 ± 18.24	40.25 ± 33.45	41.35 ± 27.80	17.28 ± 29.43
PII	**FM-SRP**	22.80 ±9.37	12.60 ±8.89	10.55 ±7.80	7.89 ±5.30
	MS-SRP	20.30 ±7.44	14.45 ±7.67	11.21 ±7.67	8.64 ±3.99

Table 2 shows the result of periodontal therapy in intervals of 30, 60 and 90 days. There was a reduction in the levels of PPD but without statistical difference between the therapies. For the parameter of Bop, was found a statistical difference for 30 and 60 days, where the group of full-mouth showed more reduction of Bop than conventional therapy ($p = 0.003$). But in 90 days, there was no significant difference between groups ($p = 0937$). For PII there was not statistical difference between the groups ($p> 0.05$) when comparing the reduction. PII showed a statically significance ($p= 0.007$) reduction 90 days after treatment when compared with the initial values

Table 2 Mean (standard deviation) of reduction to the PPD parameters of the periodontal therapies in 30, 60 and 90 days and median of reduction to Bop parameter (p value: PPD according ANOVA e Bop, PII according Kruskal Wallis).

	30days		60days		90days	
	FM-SRP	**MS-SRP**	**FM-SRP**	**MS-SRP**	**FM-SRP**	**MS-SRP**
PPD(mm)	1.56 ±1.46	1.42 ±1.47	1.41 ±1.41	1.26 ±1.38	1.60 ±1.45	1.48 ±1.76
P value	0.879		0.875		0.830	
BoP	56.05	48.98	54.09	47.88	70.69	71.95
P value	0.003		0.003		0.937	
PII	70.05	65.7	67.7	64.3	40.2	32.7
P value	0.004		0.002		0.007	

DISCUSSION

In the study, the results of different treatments at the end of 90 days of treatment (Table 2) showed that there was no statistical difference between the groups of non-surgical periodontal therapy: full-mouth and conventional therapy. Thus, the

clinical results obtained with the non-surgical treatment alone showed efficacy in reducing PPD , consistent with the results of some studies,[9,16-17] which confirmed the success of the therapy in periodontal disease control.

Despite others studies [9,16-17] showed the same results, the present study have clinical relevance to the practice of community dentistry and strong interest to the international readership because the most of the researchers in their works asked to have more studies about the comparison of the periodontal therapies. With more studies, different protocols and different samples have about periodontal therapy, more will be possible to understand the disease and find the most effective treatment. So, it is always welcome to the community dentistry a study trying to verify if full-mouth ultrasonic debridement provides clinically relevant improvements in the periodontal treatment. A systematic review [18] compared clinical effects of periodontal treatment modalities (full-mouth X quadrants) finding no significant differences between them. Several studies have found no significant difference between full-mouth therapy and quadrants, [11,19-20] agreeing with the results observed in this study, where there was a reduction of PPD, however there is still no statistically significant difference between treatment groups.

Another a systematic review[21] calculated PPD of 1.18 mm, the data from this study were gains of 0.99 mm, in line with the review cited. A study [22] showed six months after full-mouth ultrasonic debridement, the PPD reduction was 2.03mm and 4.24mm for the initially moderate and deep pockets, respectively. And, according another study,[23] in also six months after full-mouth ultrasonic debridement the PPD changes were 1.93 and 3.44mm for moderate and deep pockets, respectively. A study[24] used three different treatments, full-mouth with CHX, without CHX and conventional without CHX in 25 patients and, at the end of the study, the authors found no difference between the groups and no difference in the presence or absence of CHX adjunct to treatment. Another study[25] also compared full-mouth against conventional therapy in 39 patients and found that, at the end of 90 days, no differences were found between the groups. Both aforementioned studies are consistent with the data found in the present study.

Some studies[8,11,19,26] compared full-mouth and conventional therapies with CHX groups which included placebo, and there were found some important effect adjunct of CHX within six months of follow up. In the present study, the groups also received full-mouth plus CHX; however the results showed no difference between groups, agreeing with the findings cited above. A systematic review[27] also showed that full-mouth with or without antiseptics not from significant clinical benefits in patients with chronic periodontitis. Anyway, the efficacy of CHX has been demonstrated in several studies[28,29,30] because of the antibacterial power and substantivity of this solution. A study[31] evaluated 184 patients with moderate to severe periodontitis in four treatment groups: full-mouth + metronidazole, full-mouth + placebo, conventional + metronidazole and conventional + placebo and no differences were observed in the mean RAL and PPD values between the four experimental groups at baseline and 12 months post-treatment.

CONCLUSION

At the evaluation 90 days after treatment, no statistical difference was found between the two periodontal therapies, but at 30 and 60 days, the parameter BoP showed more reduction for the full-mouth therapy.

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