

Surgical Versus Non-Surgical Periodontal Therapy in Reduction of Periodontal Pockets (5 - 8mm Depth)

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Abstract

Periodontal disease is a major problem affecting human dentition. Early diagnosis and evaluation of the results of periodontal therapy is important for controlling the disease.

Purpose: The Purpose of this randomized split mouth clinical trial was designed to compare the effectiveness of non-surgical periodontal therapy through plaque control, scaling and root planing with the surgical one using Modified Widman's flap, in reduction of periodontal pockets 5 - 8 mm in depth.

Material and Methods: Seventeen patients males and females with advanced periodontal diseases who were recruited from patients seeking treatment at Khartoum University Faculty of Dentistry Periodontic clinic. Full mouth scaling, polishing and root planing applied to all patients followed by oral hygiene instructions. One month later, Modified Widman's flap procedure applied to one sextant which was randomly selected. Periodontal parameters measurements were taken again at days 28, 56 and 84th.

Results: For both surgical and non-surgical treated sites, the Mean and Standard deviations of periodontal Parameters, Plaque index (PLI), Gingival index (GI), Probable pocket Depth (PPD) and Gingival recession showed significant reduction except for the Gingival recession which showed increment at the surgically treated sites.

Conclusions: Both Surgical therapy using Modified Widman's Flap and Non-surgical treatment by scaling and root planing are equally effective in the reduction of periodontal pockets (5 - 8 mm) depth.

Keywords: *Plaque; Non-Surgical Periodontal Therapy; Modified Widman's Flap*

Introduction

Periodontal disease is a major problem affecting the human dentition. It is an infectious inflammatory destructive disease initiated by microbial biofilm in a susceptible host [1]. Early diagnosis and evaluation of the results of periodontal therapy is important in controlling the disease. Oral hygiene procedures combined with supra and sub gingival scaling and root planing are effective methods in the treatment of periodontal disease and maintaining a healthy periodontal condition [2]. On the other hand, surgical procedures for periodontal pocket elimination and plaque control are indicated to gain access to the sub gingival surfaces for proper debridement and to create anatomical configuration of the periodontal tissues that facilitate patient home care. The first comparative study between different periodontal therapies was done by Ramfjord., *et al.* (1968) [3,4].

Material and Methods

Study Populations consisting of seventeen patients with advanced periodontal disease were recruited from patients seeking treatment at Khartoum University Faculty of Dentistry Periodontic clinic. Case control study was applied on the same patients without sex predilection and with age range 35 - 45 years. Patients have had at least two sextants with periodontal pockets 5-8mm, healthy without systemic diseases and did not take an antibiotic in the last one month. Females were neither pregnant nor taking oral contraceptives. Approval and informed consent have been obtained. For all patients included in the study the following parameters were recorded at days zero (first visit), 28, 56 and 84th. The Parameters were Plaque index (PII), Löe and Sillness (1963), Gingival index (GI), Sillness and Löe (1964), Probable Pocket Depth (PPD) in mm and Gingival recession in mm, hence clinical attachments loss (CAL) Parameters were performed at six sites per tooth for at least one tooth from each sextant excluding third molars by color coded William probe. Then full mouth scaling, polishing and root planing with manual scalars were applied. Any ultrasonic scaling was followed by manual scaling sometimes local anaesthesia was needed. After one month, the Modified Widman's flap applied to one sextant which was randomly allocated. Parameters measurements were taken again at days 28, 56 and 84th.

Results

The mean age for the study populations consisting of patients with advanced periodontitis was (38.53 ± 3.47) years. The mean Plaque index for surgically treated sites was significantly reduced from (1.41 ± 0.62) to (1.33 ± 0.58) however It increased again on day 84 by (0.08). For the non-surgically treated sites PII was also reduced from (1.41 ± 0.71) to (1.40 ± 0.55). The mean Gingival index of surgically treated sites showed reduction from (2.00 ± 0.35) to (1.80 ± 0.45). Whereas the non-surgically treated sites showed the same reduction of the mean of GI from (1.94 ± 0.34) to (2.00 ± 0.00) with slight elevation at days 54 and 71. The three months observations of Probable pocket depth showed an overall reduction in pocket depth for both groups. The reduction was greater for the non-surgically treated sites from (5.18 ± 0.95) to (5.00 ± 2.65) however no statistical insignificant difference between the surgical treated sites that was reduced from (5.71 ± 0.99) to (5.33 ± 1.53) and the Non-surgical groups was observed. The surgical technique chosen seems to have limited influence upon changes in clinical attachment gain. The mean and standard deviation measurements of Gingival recession was greater in the surgically treated sites from (1.35 ± 0.87) to (2.33 ± 3.21) compared to non-surgical treated sites (2.00 ± 1.22) to (2.33 ± 4.04), but there was no statistical significant difference between the two groups.

Sex	Group No. (%)		Total
	Surgical	Non-Surgical	
Males	5	5	10
	50.0	50.0	100
Females	12	12	24
	50	50.0	50.0
	17	17	34
	50.0	50.0	100.0

Table 1: The distribution of participants according to age and sex.

Days	Surgical X ± SD	Non-surgical X ± SD	P Values
0	1.41 ± 0.62	1.41 ± 0.71	1.00
7	1.59 ± 0.62	1.41 ± 0.62	0.41
35	1.11 ± 0.60	1.22 ± 0.44	0.66
54	1.33 ± 0.52	1.33 ± 0.52	1.00
71	1.40 ± 0.55	1.40 ± 0.55	1.00
84	1.33 ± 0.58	1.67 ± 0.58	0.52

Table 2: Means and standard deviations of Plaque Index among participants at different visits.

Days	Surgical X ± SD	Non-Surgical X ± SD	P value
0	2.00 ± 0.35	1.94 ± 0.43	0.67
7	1.88 ± 0.49	1.76 ± 0.44	0.46
35	1.98 ± 0.33	2.00 ± 0.00	0.58
54	1.83 ± 0.41	2.00 ± 0.00	0.33
71	1.80 ± 0.45	2.00 ± 0.00	0.34
84	2.00 ± 0.00	2.00 ± 0.00	0.3

Table 3: Means and standard deviations of Gingival Index among participants at different visit.

Days	Surgical X ± SD	Non-surgical X ± SD	P Values
0	5.71 ± 0.99	5.18 ± 0.95	0.12
35	5.22 ± 1.64	4.89 ± 1.36	0.65
54	5.00 ± 1.79	4.33 ± 1.51	0.50
71	4.80 ± 2.49	4.40 ± 0.89	0.74
84	5.33 ± 1.53	5.00 ± 2.65	0.86

Table 4: Means and standard deviations of Probable Pocket Depth in (mm) among participants at different visits. X ± SD.

Days	Surgical X ± SD	Non-surgical X ± SD	P value
0	1.35 ± 0.87	2.00 ± 1.22	0.20
7	1.41 ± 1.00	1.58 ± 1.00	0.61
35	1.78 ± 1.20	1.56 ± 1.24	0.70
54	2.33 ± 2.50	2.17 ± 2.14	0.90
71	2.40 ± 2.19	2.00 ± 1.87	0.76
84	2.33 ± 3.21	2.33 ± 4.04	1.00

Table 5: Means and standard deviations of Gingival Recession in (mm) among participants at different visits.

Discussions

The present study showed reduction in mean pocket depth at non-surgically treated sites from (5.18 ± 0.95) to (5.00 ± 2.65) . However, no statistical insignificant difference between the surgical treated sites that was reduced from (5.71 ± 0.99) to (5.33 ± 1.53) and the Non-surgical groups was observed. Cercek JF, Kiger RD., *et al.* in 1984 [5] when evaluated the effects of oral hygiene and surface root planing in a two years study, they concluded that bulk of effects of therapy were derived from surface root planing SRP. More over this study resulted in no statistical difference between surgical and non-surgical treated groups in reduction of periodontal pockets depth and CAL gain however Becker W and Becker BE., *et al.* [6] in their longitudinal study comparing surface root planing with Modified Widman's flap, osseous surgery and APF they concluded that both surgical procedures were equally effective while surface root planing was less effective in reducing periodontal pockets depth. On the other hand the results of this study were similar to the studies done by Rosling B [7] 1983, who compared the effectiveness of surgical and non-surgical treatments using MWF. They concluded that surgical treatment resulted in more reduction of PD and CAL gain than surface root planing in two years duration [8]. However, a five years follow up studies by Lindhe., *et al.* [11] showed no statistical difference in PD reduction and CAL gain was observed between the surgical and non-surgical treated groups.

Conclusions

Both Surgical and Non-surgical scaling and root planing are equally effective in the reduction of periodontal pockets (5 - 8 mm) depth. Gingival recession is apparent following the surgical treatment.

Recommendations

Patients with periodontal pockets (5 - 8 mm) depth should be treated non-surgically as possible and the decision to go for surgery, should be limited to cases where non-surgical treatment failed. If the success of the periodontal therapy is to be insured. If a pronounced reduction in pocket depth is required the Modified Widman's Flap procedure may not be the appropriate treatment and more definitive surgical procedures should be applied.

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Conflict of Interest and Source of Funding

There are no conflicts of interest in this study.

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