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Early diagnosis of periodontal disease needs less treatment and prevents tooth loss

Abstract

Periodontal disease is a chronic inflammatory condition and major cause of tooth loss.

Aim: The aim of this study was to measure the number of teeth lost among a random sample of individuals receiving periodontal treatment and maintained for long-term follow-up at a university faculty practice.

Materials and methods: One-hundred subjects who had received periodontal treatment and had been on recall for three or six months for at least five years, up to twenty years, participated in this study. Subjects had at least twenty teeth. The same periodontist treated all patients. Treatment was scaling and root-planing for mild periodontitis, or scaling and root-planing plus surgery for moderate to advanced periodontitis; then all patients were on recall every three months or six months.

Results: Twenty two men (38.60%) had tooth loss, compared to 37(40.22%) women who lost their teeth. This was not significant (p=0.84). The difference between patients who had scaling and root-planing versus scaling and root-planing with surgery was significant (p=0.025), but the recall interval was not significant (p=0.139). After adjusting for age, gender and recall, treatment was still statistically significant.

Conclusion: Early diagnosis of periodontal disease could be treated by scaling and root-planing, with patients losing fewer teeth than treating patients with moderate to advanced periodontal disease who required surgery. Patient's knowledge of periodontal disease, early diagnosis with periodontal maintenance prevents the progression of the periodontal disease.

Keywords: periodontal disease/prevention, patient compliance, tooth loss

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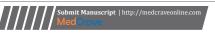
Introduction

Periodontal disease is a chronic systemic disease; the goal of periodontal treatment is to maintain the teeth as long as possible with good functional and healthy condition. Many studies have shown the value of maintenance after active periodontal treatment to keep natural dentition. Several older studies have examined this issue closely. Hirschfeld & Wasserman[1] studied 600 patients in private practice after active periodontal treatment, followed for 22 years. Only 7.1% lost their teeth due to periodontal reasons. In McFall's[2] analysis of tooth loss in one-hundred patients (1982), 77% were determined to be well-maintained. Lindhe & Nyman[3] looked at 61 patients who had periodontal treatment and periodontal maintenance every 3-6months for 14 years: their study showed only 2.3% teeth were lost. Wilson et al. (1984) also studied the importance of periodontal recall. They measured tooth loss over a 5-year period for patients on recall maintenance. Their study showed tooth loss happened in the erratic compliers; the patients who presented for regular maintenance had less chance to lose their teeth. Fardal et al. (2004), a retrospective survey of tooth extraction due to periodontal disease looking at independent variables like age, recall visits and smoking, showed age and smoking were significant risk factors. Chambrone et al.,[5] conducted a retrospective study looking tooth loss among patients in one private dental practice in Brazil who had periodontal treatment and were maintained for 10 years or longer. Their findings, consistent with other studies, concluded that subjects with older age and smoking were more susceptible to lose teeth due to periodontal problems. The American Academy of Periodontology's position paper (2003) states that for most patients with a history of periodontitis, visits at every 3-month intervals may be required. The AAP goes on to take the position that periodontal maintenance quarterly "will result in decreased likelihood of progressive disease, compared to patients receiving PM on a less frequent basis." A recent study by Faroogi et al.,[6] showed that a fixed recall interval (every three months) for all patients after active periodontal treatment yielded weak results, and advised instead that the recall appointment interval be recommended on an individual basis. The aim of the present study was to measure amount of tooth loss among patients who had received periodontal treatment and were on periodontal maintenance for long times. A secondary aim was to investigate if early diagnosis of periodontal disease could result in less tooth loss.

Materials and methods

This was a retrospective study. One hundred chart of patients who had periodontal treatment at the University of Pittsburgh School of Dental Medicine faculty practice randomly selected and reviewed for this study. Periodontal treatment was either by scaling and root-planing or by scaling and root-planing combined with periodontal surgery if necessary. Scaling and root-planing was done on patient with mild periodontitis; scaling and root-planing with surgery was performed on patients with moderate to advance periodontitis. All treatments performed by the same periodontist. Individuals presenting with any systemic disease that may affect either periodontal treatment or the outcomes of periodontal treatment excluded. All patients were adult. Periodontal diagnosis s based on the current AAP classification; only patients diagnosed as having generalized chronic periodontitis selected. The reasons for tooth loss and numbers of teeth lost recorded. The reasons for tooth loss were endo treatment, orthodontic treatment, or poor prognosis due to compromised periodontal condition. Age and

gender also considered. The average periodontal recall was five years and ranged up to twenty years. All patients in the study were required to have 20 teeth. Inclusion all the patients chart who had periodontal treatment and were on five year or more years on recall were included. Exclusion chart of patients who were on recall less than five years and did not completed periodontal treatment excluded.

Results

Records of one hundred subjects, who had received periodontal treatment,and were subsequently being on periodontal re-call for at least five years, and up to twenty years, analyzed. Twenty-two men (38.60%) had tooth loss, compared to 37(40.22%) women who lost their teeth. This was not significant (*p*=0.84) (Table 1). These patients were on either three- or six-months recall. Age was not significant, *p*=0.337 (Table 2). Among the subjects, 44% of those on three-months recall lost teeth, versus 31% of those on six-month recall who lost teeth. This difference was not statistically significant, *p*=0.14 (Table 3). When we looked at treatment, 40% of those receiving surgery lost teeth; 27% of those with SRP lost teeth, and 43% of those with surgery and SRP lost teeth. This difference was statistically significant *p*=0.025 (Table 4). After adjusting for age, gender and recall, treatment was still significant. Those odds of losing teeth were 60% lower for those with SRP treatment compared to those with surgery. The odds of losing teeth were 18% lower for those with surgery plus SRP, compared to those receiving surgery only. This effect was statistically significant *p*=0.04 and is reported in Table 5.

Table 1 Tooth loss and gender

Gender	0	1 or 2	Total
	35	22	57
M	61.40	38.60	100
	38.89	37.29	38.26
	55	37	92
F	59.78	40.22	100
	61.11	62.71	61.74
	90	59	149
Total	60.40	39.6	100
	100.00	100	100

Pearson chi 2(1)=0.0387   Pr=0.844 38.6% of men had tooth loss. 40.2% of women had tooth loss. Gender is not statistically significant (p=0.84).

Table 2 Tooth loss and age

Age	0	1 or 2	Total
	15	5	20
<50	75.00	25	100
	16.67	8.47	13.42
	45	34	79
50-60	56.96	43.04	100
	50	57.63	53.02
	30	20	149
<65	60	40	100
	33.33	33.9	100
	90	59	149
Total	60	39.6	100
	100	100	100

Pearson chi2(2)=2.1762 Pr=0.337

25% of the <50 group experienced tooth loss. 43% of the 50-65 group experienced tooth loss. 40% of the >65 group experienced tooth loss. Age group is not statistically significant (p=0.34).

Table 3 Tooth loss and recall

Recall	teeth lost		
	0	1 or 2	Total
	55	43	98
3 mo	56.12	43.88	100
	61.11	72.88	65.77
	35	16	51
6 mo	68.63	31.37	100
	38.89	27.12	34.23
	90	59	149
Total	60.4	39.6	100
	100	100	100

Pearson chi2(1)= 2.1931   Pr=0.139

44% of those on 3 month recall lost teeth. 31% of those on 6 month recall lost teeth. This difference is not statistically significant (p=0.14).

Table 4 Tooth loss and treatment

Treatment	teeth lost		
	0	1 or 2	Total
	40	39	79
SURG	50.63	49.37	100
	44.44	66.1	53.02
	46	17	63
SRP	73.02	26.98	100
	51.11	28.81	42.28
	4	3	7
SURG + SRP	57.14	42.86	100
	44.44	5.08	4.7
	90	59	149
Total	60.4	39.6	100
	100	100	100

Pearson chi2(2)=7.3743   Pr=0.025

49% of those with SURG lost teeth. 27% of those with SRP lost teeth. 43% of those with SURG+SRP lost teeth. This difference is statistically significant (p=0.025)

Table 5 Tooth loss and treatment, adjusting for baseline covariates

age	0-2	(naturally coded; _Iage2_0 omitted)
treatment	1-3	(naturally coded; _Iage2_0 omitted)
gender	1-2	(naturally coded; _Irecall_1 omitted)
recall	1-2	(naturally coded; _Irecall_1 omitted)

Iteration 0: log likelihood = -100.03042

Iteration 1: log likelihood = -94.514666

Iteration 2: log likelihood = -94.468237

Iteration 3: log likelihood = -94.468236

Number of obs   = 149

LR chi2(6)= 11.12

Table Continued

Logistic regression		Prob > chi2 = 0.0846				
Log likelihood = -94.468236		Pseudo R2= 0.0556				
num teeth lost 2	Odds	Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]
age2_1	2.163735	1.257974	1.33	0.184	0.692347	6.762143
age2_2	1.878016	1.152718	1.03	0.305	0.563943	6.254077
treatment_2	0.398755	0.147025	-2.49	0.013	0.193579	0.821396
treatment_3	0.817518	0.67126	-0.25	0.806	0.163524	4.087091
gender_2	1.009337	0.367467	0.03	0.98	0.494471	2.060303
recall_2	0.610641	0.233138	1.29	0.196	0.288938	1.290529
cons	0.592856	0.359366	-0.86	0.388	0.180711	1.944974

testparm_ltr*

1. numteethlost2]_ltreatment_2=0

2. [numteethlost2]_ltreatment_3=0

chi2(2)=6.26

Prob>chi2=0.0437

After adjusting for age, gender and recall, treatment is still statistically significant. Those odds of losing teeth were 60% lower for those with SRP treatment compared to those with SURG. The odds of losing teeth were 18% lower for those with SURG + SRP compared to those with SURG. This effect is statistically significant (p=0.04).

Conclusion

Early diagnosis of periodontal disease could be successfully treated with scaling and root-planing, with patients losing fewer teeth, compared to treating patients with moderate to advanced periodontal disease who had required surgery. Patient's knowledge of periodontal disease and early diagnosis with periodontal maintenance prevent the progression of periodontal disease.[7–12]

Acknowledgements

Conflict of interest

The author declares that there is no conflict of interest.

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