



ORIGINAL ARTICLE

A comprehensive periodontal treatment project: The periodontal status, compliance rates, and risk factors



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Abstract *Background/purpose:* The comprehensive periodontal treatment project (CPTP) is being implemented in Taiwan since 2010. This retrospective study compared the periodontal status, compliance rates, and influence of risk factors for periodontal recurrence and tooth loss among groups of patients who accepted CPTP and conventional periodontal treatment (CPT). *Materials and methods:* A total of 161 patients who received periodontal therapy were investigated and divided into compliant ($n = 94$) and noncompliant ($n = 67$) groups. Patients in the compliant group were further assigned to two subgroups: CPT with a postcard recall (PR) system (CPT + PR, $n = 48$) and CPTP with a PR system (CPTP + PR, $n = 46$). Demographic characteristics and periodontal parameters, including the probing pocket depth (PPD), bleeding on probing (BOP), and plaque control record (PCR), were collected for comparison between the subgroups. The risk factors for periodontal recurrence and tooth loss were statistically analyzed. *Results:* The 161 patients were followed-up for a mean of 3.8 years. The patients in the CPTP + PR subgroup exhibited shallower PPD, less BOP, improved PCR, and fewer tooth loss. Age, smoking, $PPD \geq 7$ mm, and $PCR \geq 30\%$ were associated with periodontal recurrence, whereas age, diabetes, $BOP \geq 30\%$, and duration of the follow-up period were correlated with tooth loss. PR apparently increased the compliance rate of patients (27.3% vs. 77.7%). *Conclusion:* CPTP with PR led to an optimal and stable periodontal status in patients. Compliant patients maintained a significantly improved periodontal status as compared with noncompliant patients.

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Introduction

The long-term stability of periodontal status depends upon active periodontal therapy combined with supportive periodontal therapy (SPT) or periodic recall maintenance care.^{1–3} Patients who receive periodontal treatment without regularly complying with SPT are susceptible to recurrent periodontal disease and considerable tooth loss.^{4–6} Although SPT provides clinical benefits, few treated patients comply with regular recall.⁷

Understanding the influence of risk factors on maintaining a better periodontal status can facilitate identifying periodontal progression and tooth extraction with an unpredictable prognosis. The results of an 11-year maintenance program indicated that heavy smoking, initial diagnosis, and a probing pocket depth (PPD) ≥ 6 mm were risk factors for periodontal progression, whereas a PPD ≥ 6 mm and bleeding on probing (BOP) $\geq 30\%$ were risk factors for tooth loss.⁸ However, because of the heterogeneity among these studies, the effects of compliance on the risk factors for periodontitis have not been definitively compared.

Japan advocated the “8020 Movement” program, a nationwide promotion aimed at retaining more than 20 teeth in people over 80 years of age. The “8020 Promotion Foundation” executed the program for more than 15 years.^{9,10} In 1995, a similar conventional periodontal treatment (CPT) program was started in Taiwan under the surveillance of the National Health Care Program. However, the efficiency of CPT was unsatisfactory and inconsistent because patients lacked motivation for, or vigilance in their treatment. The patients had to pay approximately 20% of the treatment fees and there was no meticulous recall system to remind them about professional aftercare. In Taiwan, a comprehensive periodontal treatment project (CPTP) was proposed in 2000 and implemented in 2010. The CPTP is supported by a special government budget for fully supporting the additional 20% expense of treatment fees when most patients have moderate to severe periodontitis and require comprehensive treatment. At present, only two countries, Taiwan and Japan, have actively developed a health policy for treating periodontal disease and preventing tooth loss. Currently, we have established a postcard recall (PR) system in the Periodontal Clinics of Taipei Medical University Hospital to maintain a high level of motivation in patients during their maintenance care and to diminish the high prevalence of periodontal disease (94.8%) in Taiwan.^{11,12} Based on our research, no study has comprehensively scrutinized the periodontal status of patients who received treatment through CPTP and compared the results of CPTP with those of CPT.

The objectives of this longitudinal study were to evaluate and compare the periodontal status, compliance rates, and influence of risk factors on periodontal recurrence and tooth loss in individuals between the compliant and noncompliant groups.

Materials and methods

Patients

Patients diagnosed with chronic or aggressive periodontitis (ChP or AgP), according to the classification of the American Academy of Periodontology,¹³ between 2006 and 2013

were randomly selected for this retrospective study. Patients with gingivitis or mild periodontitis were assigned to interns and those with moderate-to-severe periodontitis were assigned to postgraduate students. All studied patients were assigned according to the clinical standard operational procedure and a clinical superintendent oversaw all procedures. Demographic characteristics of patients, such as age and sex, were recorded (Table 1). The Joint Institutional Review Board of Taipei Medical University (TMU), Taiwan, approved this study (TMU-JIRB-201406024).

Sample grouping and comparisons

The studied patients were divided into compliant ($n = 94$) and noncompliant ($n = 67$) groups depending on regular recall from 2006–2013.¹⁴ The compliant-group patients were further assigned to CPT + PR ($n = 48$) and CPTP + PR ($n = 46$) subgroups. Patients who attended CPT from 2006–2010 and CPTP or CPT after 2010 and missed more than one recall after receiving active periodontal therapy were considered noncompliant. The grouping data are shown in Figure 1.

In order to independently evaluate the effect of PR on the compliance rate, 110 additional CPT cases before 2010, when the PR system was not developed, were randomly chosen using a computer. The compliance rates were compared on the basis of whether the patients underwent PR surveillance before or after 2010 (Table 2).

CPT and CPTP

Patients who required periodontal treatment at TMU Hospital were administered CPT + PR and CPTP + PR before and after 2010, respectively. Eligibility criteria for receiving CPTP were: (1) no history of periodontal treatment elsewhere; (2) effective medical control of systemic disease, or no disease; (3) diagnosed as moderate to severe ChP or AgP in at least six teeth with a PPD ≥ 5 mm; and (4) at least 16 teeth remaining in the oral cavity after nonsurgical therapy. Patients who were ineligible for CPTP + PR underwent CPT + PR and paid approximately 20% of the treatment fees.

Both CPT and CPTP include meticulous periodontal therapy, oral hygiene instructions, flap surgery, and long-term surveillance. The patients who received CPT before 2010 were mostly only verbally instructed to return for regular maintenance, whereas after 2010, the CPT and CPTP patients were followed-up by PR surveillance.

Postcard recall

PR was initiated in 2010 and designed as a standard procedure in our department for a 6-month period. Receiving CPT or CPTP after 2010, the patients wrote their address on a postcard after each subsequent 6-month recall appointment.

Clinical periodontal status

Periodontal parameters were determined at three time points: the initial appointment (T1, initial examination),

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