

Nonsurgical periodontal therapy to treat a case of severe periodontitis

A 12-year follow-up

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Periodontitis is an inflammatory condition of the supporting structures of the teeth that affects 47% of adults over the age of 30 years.¹ The high prevalence of periodontitis should be of concern because if untreated, it may result in tooth loss.² The tissue destruction caused by periodontitis can result in compromised masticatory function, impaired speech, and adverse esthetic problems, which can worsen a patient's quality of life.³

Orthodontic treatment in adults is now a common modality of therapy to improve esthetics and function. As the incidence of periodontitis increases with age, the number of adult patients who are in need of corrective tooth movement—who also have a periodontal problem—is increasing.⁴ Fortunately, a reduced periodontium is not a contraindication for orthodontic treatment.⁵⁻⁷ To perform orthodontic therapy without further periodontal damage, periodontal health must be attained before tooth movement is initiated. Moreover, the periodontally healthy dentition should be maintained with a 3-month periodontal maintenance interval and excellent plaque control during the course of orthodontic therapy^{8,9}; if the oral hygiene is

ABSTRACT

Background and Overview. This case report describes the successful treatment of a severe chronic periodontitis case by nonsurgical therapy and a strict maintenance program over a 12-year period.

Case Description. A 38-year-old man concerned about the protrusion of his maxillary incisors was referred for periodontal treatment. The teeth in the maxillary arch had generalized severe chronic periodontitis. Several treatment options were presented to the patient including the most aggressive, extraction of all maxillary teeth, and the most conservative, scaling and root planing. The patient opted to having the most conservative approach, even though the prognoses for the maxillary teeth were unfavorable. Therefore, he received nonsurgical therapy via scaling and root planing combined with systemic antibiotics before referral to an orthodontist to address the esthetic concerns. The maxillary dentition was treated with orthodontic therapy to retract and align the maxillary anterior segment. Periodontal maintenance (1-hour session), including subgingival instrumentation, was performed 4 times per year until the end of the 12-year follow-up period. The patient only missed 2 appointments in 12 years. Twelve years later, the results revealed that all but 1 maxillary tooth were maintained in a state of acceptable health, function, and esthetics.

Conclusions and Practical Implications. Although most would agree with the initial poor prognosis of this patient's case, nonsurgical periodontal therapy was utilized with a 3-month periodontal maintenance program and demonstrated long-term success. The outcome presented in this case report may only have been possible because of patient compliance, professional experience, skill, and supervision throughout the course of treatment.

Key Words. Generalized severe chronic periodontitis; nonsurgical therapy; periodontal maintenance; orthodontics.

JADA 2015;146(8):631-637

<http://dx.doi.org/10.1016/j.ada.2015.02.013>

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not excellent to good, orthodontic treatment should be terminated.¹⁰

This patient's case report describes the successful interdisciplinary treatment of a patient with severe chronic periodontitis who sought care for a buccal flare of his maxillary anterior teeth. Treatment involved non-surgical periodontal therapy followed by orthodontic treatment.

The combined periodontal and orthodontic therapy provided the patient with stability for 12 years, with respect to tooth retention, periodontal health, function, and esthetics.

CASE PRESENTATION

A 38-year-old nonsmoking man, in good general health, was evaluated at the author's (J.C.) private practice for periodontal therapy. The patient denied having diabetes; unfortunately, laboratory tests, such as hemoglobin A_{1c} levels, were not performed to rule out diabetes. The patient's main concern was summarized by his explanation that the "upper anterior teeth have moved out of place," which compromised his dental esthetics over the last 5 years. The maxillary tooth movement was a result of periodontitis. No contraindications to dental treatment and periodontal therapy were identified.

At the initial examination (Figure 1), significant gingival recession was seen along with extensive supra- and subgingival calculus in the maxillary arch. Pocket depths (PD) were deep around most maxillary teeth (Table). Radiographic examination of the maxillary teeth showed at least 70% bone loss on most teeth. In spite of the severe attachment and bone loss, tooth mobility did not exceed Miller Class I¹¹ (data not shown). Teeth nos. 3 and 14 had Class III furcation involvement. Teeth nos. 3, 4, 5, 7, 8, 9, 10, and 14 were initially assigned a hopeless periodontal prognosis.¹² Tooth no. 14 had an initial furcation cavity. Teeth nos. 6, 12, 13, and 16 were assigned a questionable prognosis, as they had lost at least one-third of their bone support and had initial mobility. Only teeth nos. 1, 2, 11, and 15 were periodontally stable and assigned a fair prognosis (expected to survive \geq 5 years). All mandibular teeth were assigned a fair/good prognosis.

The following characteristics were considered positive prognostic factors for tooth retention:

- limited tooth mobility;
- nonsmoking patient;
- high motivation for dental care;
- excellent oral hygiene.

An initial diagnosis of generalized aggressive periodontitis¹³ was contemplated due to the low plaque index score (15%)¹⁴ associated with the amount of radiographic bone loss. However, a nonprescribed use of chlorhexidine mouthwash was likely the reason for the low plaque index. Also, the amount of subgingival

calculus associated with virtually no mandibular bone loss corroborated with the chronic periodontitis diagnosis.¹³

A diagnosis of generalized severe chronic periodontitis¹³ was made for the maxillary arch, whereas the mandibular arch received a diagnosis of generalized mild to moderate chronic periodontitis. Tooth no. 30 was lost due to a vertical fracture and tooth no. 17 was surgically extracted several years before periodontal treatment.

From an orthodontic perspective, the patient had proclined and protruded maxillary teeth, a Class I molar relationship on the left side, and a posterior crossbite on the right side. The maxillary midline was shifted to the left. The patient had the parafunction of clenching and grinding.

Periodontal treatment. Four treatment options were plausible in this case. The initial option consisted of extraction of all or most maxillary teeth and replacement with a full or partial removable prosthesis. Another option consisted of extraction of all maxillary teeth with the placement of implants for fixed or removable support. In addition, yet another option involved an attempt to save all the maxillary teeth through a surgical regenerative therapy. A final option was the combination of nonsurgical therapy, and possibly orthodontic treatment, which would need to be followed by a 3-month maintenance care program.

The patient was informed that the latter option would be performed without the treating dentist's ability to predict tooth longevity, as several teeth had been assigned a poor or hopeless prognosis. The patient understood the options and made an informed decision to attempt to maintain his natural dentition. He justified his choice based on his age and comfort, which eliminated the utilization of full removable prosthesis, periodontal regenerative materials, or implants as treatment options.

Periodontal treatment was initiated via professional supragingival biofilm control and oral hygiene instructions, followed by a 30-day daily rinsing regimen with chlorhexidine 0.12% solution 2 times per day. During this 30-day interval the patient came in for 4 appointments: 1 60-minute session of supragingival instrumentation with an ultrasonic device in both arches, and subsequently 3 1-hour sessions of subgingival instrumentation via scaling and root planing (SRP) with hand instruments and under anesthetic in the maxillary arch. All 4 appointments were completed in 1-week intervals. No occlusal adjustment was performed.

Eight weeks after SRP was concluded, the re-evaluation clinical data showed a reduction in PD and bleeding on

ABBREVIATION KEY. BOP: Bleeding on probing. PD: Pocket depths. SRP: Scaling and root planing.

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