Effect of Time Lapse between Endodontic and Periodontal Therapies on the Healing of Concurrent Endodontic-Periodontal Lesions without Communication: A Prospective Randomized Clinical Trial

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Abstract

Introduction: The aim of this prospective randomized clinical trial was to evaluate the effect of a time lapse between endodontic treatment and nonsurgical periodontal treatment on periodontal healing of concurrent endodontic-periodontal lesions without communication. **Methods:** Thirty-one patients were randomly divided into 2 groups: group 1: endodontic treatment and scaling and root planning (SRP) were performed simultaneously and group 2: SRP was performed 3 months after endodontic treatment. Both groups were followed for 3 and 6 months after SRP. Primary outcome variables were the probing depth, clinical attachment level, and periapical index score. **Results:** Both the groups showed a significant improvement in all the clinical parameters evaluated after the completion of endodontic and periodontal treatment ($P < .05$). No statistically significant difference in improvement was observed between the 2 groups at 3 and 6 months after SRP ($P > .05$). Periodontal healing responses were comparable in the 2 groups, with no apparent detriment resulting from simultaneous treatment. Improvements in periodontal parameters that were achieved in 6 months in group 2 were achieved only in 3 months in group 1 ($P > .05$). **Conclusions:** Nonsurgical periodontal treatment may be performed simultaneously with endodontic treatment in the management of concurrent endodontic-periodontal lesions without communication, and an observation period after endodontic treatment may not be required. *(J Endod 2015;41:785–790)*

Key Words

Endodontic treatment, periapical index, scaling and root planning

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The management of concurrent endodontic-periodontal lesions involves the treatment of both endodontic and periodontal components (1). These lesions can establish independently with and without communication. A series of retrospective studies by Ehnevid and Jansson et al (2–4) have suggested the role of endodontic infection as a local modifying risk factor in periodontal healing in periodontitis-prone patients and reported increased pocket depth (2), angular bony defects (2), more marginal bone loss (3), and additional attachment loss in molar furcation areas (4) in teeth with a periapical pathology with established endodontic-periodontal lesions without communication.

Furthermore, based on evidence of communication pathways between the pulp and periodontal space (5), observations of retrospective studies (2–4), histologic studies in animals (6, 7), and a replantation model (6), it is suggested that endodontic infection has a negative influence on periodontal healing, and the management of endodontic-periodontal lesions should always begin with root canal treatment.

Although some studies have also reported a negative impact of endodontic treatment and obturation materials on periodontal healing (8), other recent studies observed similar periodontal healing in adequately endodontically treated teeth and vital teeth (9, 10).

In the management of concurrent endodontic-periodontal lesions with and without communication, a time lapse of 1 to 3 months between endodontic and periodontal treatment has been suggested to facilitate adequate periapical and periodontal healing (11–16). However, these recommendations are based on animal studies (6, 7) lacking any contribution from human subjects. It was hypothesized that when 2 diseases exist separately it could be more prudent to treat them simultaneously rather than delaying other treatment for better control of the disease process. The treatment approach of performing definitive periodontal therapy 1 to 3 months after completion of endodontic treatment prolongs treatment duration and may also lead to the progression of periodontal pathogens, leading to worsening of periodontitis (17).

So far, no clinical study has compared periodontal healing while providing periodontal therapy simultaneously with endodontic treatment. The present study was designed to check the hypothesis regarding the need for an observation period after the completion of endodontic treatment and before definitive periodontal therapy.

Materials and Methods

This prospective randomized clinical trial was conducted at the Department of Conservative Dentistry and Endodontics in collaboration with the Department of Periodontics and Oral Implantology, Post Graduate Institute of Dental Sciences, Rohtak, India. The study protocol was approved by the Ethical Committee (ECR/495/Inst/HR/2013) of the Post Graduate Institute of Dental Sciences and conformed to the ethical guidelines of the Declaration of Helsinki 1975 as revised in 2000. Thirty-one adult patients (14 men and 17 women aged 26–65 years, mean age = 45.50 years, including 29 molars, 6 premolars, and 2 incisors) meeting the inclusion criteria were consecutively treated and followed from December 2012 to October 2014 after obtaining verbal and written

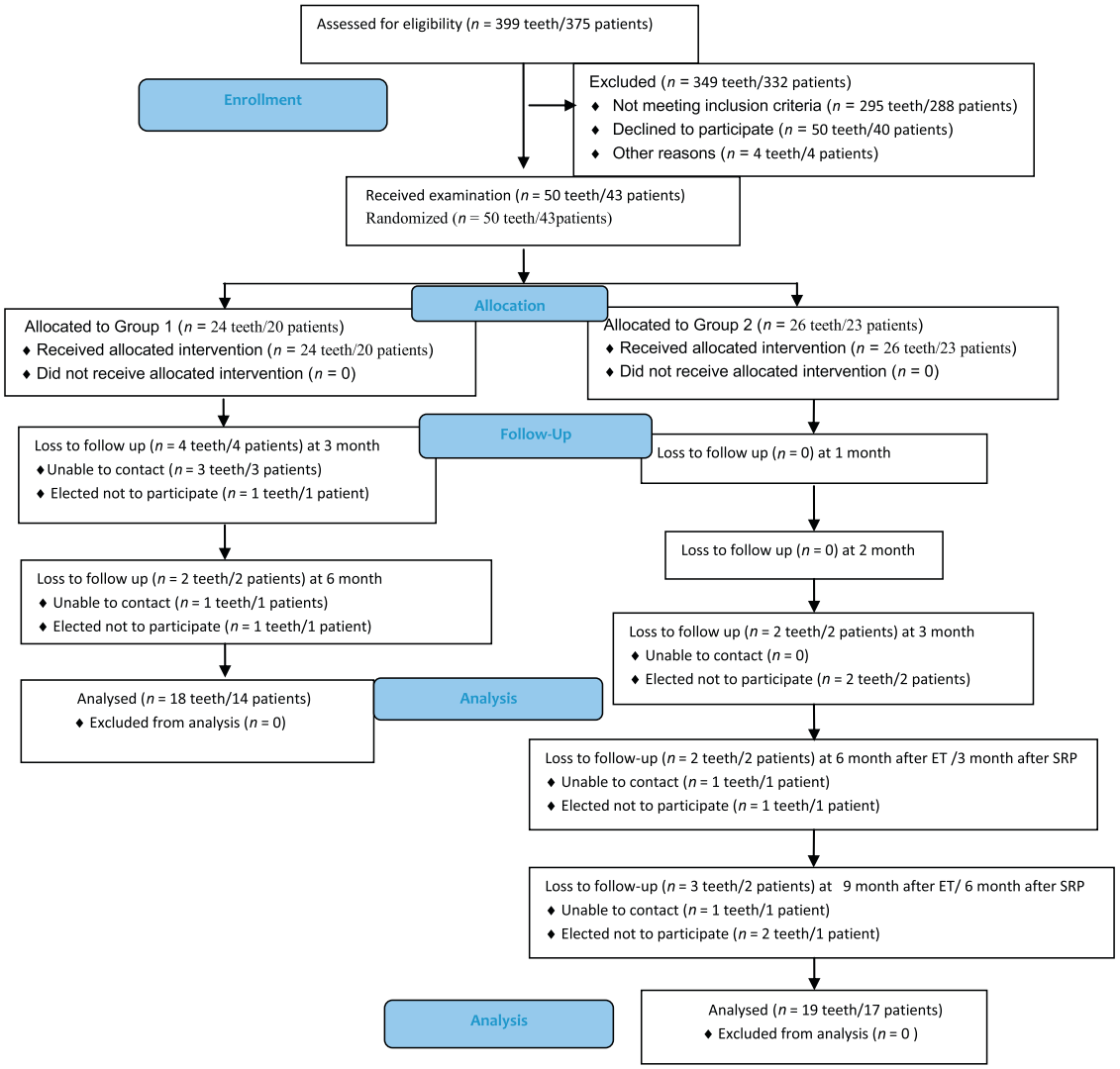

Figure 1. Consolidated standards of reporting trials flowchart.

informed consent. Mature permanent maxillary and mandibular teeth with a clinical/radiographic diagnosis of a concurrent endodontic-periodontal lesion without communication, a probing depth ≥5 mm, a wide-based pocket, confirmed as nonvital teeth using the electric pulp test (Digitest D626D; Parkell Electronics, New York, NY) and the cold test (Endo-Frost; Coltene Whaledent, Langenau, Germany), and the presence of apical radiolucency were included. Clinical diagnosis was made by the chief supervisor (Sanjay Tewari) on the basis of radiographic and clinical examination and the pulp sensibility test. Patients were excluded if they presented with acute symptoms; were younger than 18 years; had previous root fillings, unrestorable tooth, fractured/perforated roots, inflammatory root resorption, or grade 3 mobility; a history of recent periodontal therapy (within previous 6 months); were smokers, pregnant, diabetic, or immunocompromised; had a positive history of antibiotic use within past 6 months; or required antibiotic prophylaxis. Teeth with established endodontic-periodontal lesions exhibiting <2 mm radiopaque bone between the periapical lesion and the periodontal destruction were also excluded.

Randomization was developed to eliminate any bias on the part of the investigators and to equalize the number of patients between the 2 treatment groups. Using an equal proportion randomization allocation ratio, 1 of the investigators (S.M.) created envelopes containing concealed assignment codes that were assigned sequentially to eligible patients. It was ensured that neither the investigator nor the patient was aware of the treatment protocol at the time of patient allocation. A sample size of 15 patients in each group was calculated to be sufficient to detect a clinically important difference in probing depth (PD) reduction and clinical attachment level (CAL) gain (alpha level = 0.05, 80% power, and effect size = 1.0). The effect size was calculated by presuming a 1-mm clinical significant difference in PD reduction and a standard deviation of 1 mm. It was decided to enroll ≥20 patients in each group to compensate for the expected attrition.

Clinical Procedure

All the patients were subjected to initial full-mouth supragingival scaling with an ultrasonic scaler (Suprasson P5 Booster; Satelec, Merignac Cedex, France) and manual scaling instruments (Hu-Friedy, Chicago, IL) to remove visible calculus deposits together with oral hygiene instructions. After 1 week, baseline clinical measurements and the baseline periapical index (PAI) score were recorded. At this stage, randomization was performed, and endodontic treatment was started. After achieving local anesthesia (2% lidocaine with 1:100,000 epinephrine), under rubber dam isolation, caries were excavated, and the access cavity was prepared. Gates-Glidden drills (Dentsply Maillefer, Tulsa, OK)

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