

Innovations in Periodontics

Reevaluation of Initial Therapy: When Is the Appropriate Time?

Stuart L. Segelnick* and Mea A. Weinberg*

The concept of periodontal reevaluation of initial therapy needs to be revisited. From interviewing selective periodontists and reviewing the literature, it is apparent that the time period to perform a reevaluation is an ambiguous topic. This seems to be a dichotomy because today everything in dental medicine and medicine is evidence based. When reviewing selective literature sources, it was found that either a time period for reevaluation was given that was different in almost every publication, or a time period was not given but the subject of reevaluation was addressed. The objective of this commentary is to define reevaluation and to determine the best time interval after initial therapy to perform a reevaluation based on classic and current literature. Some questions that need to be addressed are the following: 1) Does too short of a time frame for reevaluation lead to the overtreatment of patients? 2) Is there a danger in reevaluating over too long of a time frame that will lead to disease progression and the return of pathogenic microbial flora? This would mean unnecessary periodontal breakdown could be occurring without appropriate further treatment. Many concerns need to be addressed, including when the appropriate time period is to measure the effects of initial therapy. After this time period, the stability of the periodontium should be evaluated rather than the effects of therapy. J Periodontol 2006;77:1598-1601.

KEY WORDS

Root planing; scaling; therapy.

DEFINITION OF REEVALUATION

Reevaluation is defined as the evaluation or assessment of treatment.¹ There are many interpretations of the purpose of reevaluation. One text states that the periodontal tissues must be carefully reexamined to determine the need for further therapy.² McGuire³ states that the primary function of reevaluation is to determine the effectiveness of scaling and root planing and to review the proficiency of home care. Reevaluation includes the following steps that are performed by the periodontist to determine the soft tissue results of scaling and root planing: bleeding on probing, probing depths, clinical attachment levels, pathologic tooth mobility, furcation involvement, assessment of local factors, plaque index, and review of oral hygiene. If needed, reinstrumentation is performed. The time for these reevaluation steps is significant.

TIME INTERVAL FOR REEVALUATION

Scaling and Root Planing

Many different time intervals, ranging from 2 weeks to 6 months, have been documented in periodontal literature to be the best time to perform reevaluation. Morrison et al.⁴ documented that the clinical severity of periodontitis is reduced significantly 1 month after the hygienic phase of periodontal therapy and that the need for surgical treatment cannot be assessed properly until completion of the hygienic phase of treatment. Pattison and Pattison⁵ stated that reevaluation of the patient's tissue response should be after 2 to 4 weeks or longer. The consensus report from the American Academy of Periodontology World Workshop⁶ agreed that a 4- to 6-week interval was usually adequate to assess the initial response to therapy. Proye et al.⁷ found that a significant reduction of probing depth (initial) occurred 1 week after root planing and reduced further (secondary) at 3 weeks. Initial pocket reduction was associated with significant gingival recession, whereas secondary pocket reduction was associated with significant gain of clinical attachment. Bleeding on probing was

* Department of Periodontology and Implant Dentistry, New York University College of Dentistry, New York, NY.

virtually absent after 3 weeks. Rylander and Lindhe⁸ concluded that in patients who use proper oral hygiene measures, healing after non-surgical therapy seemed to be complete after ~3 to 6 months. Based on the rate of healing, Egelberg¹ cites that 3 months post-treatment is a suitable interval for the primary evaluation of initial non-surgical therapy, even in areas with preliminary deep lesions. Thomas and Mealey⁹ documented that an interval of 6 to 8 weeks after non-surgical debridement was adequate time for tissues to be assessed for signs of inflammation and for changes in probing depth and clinical attachment, whereas Plemons and Eden¹⁰ documented, in the same publication, that 4 to 6 weeks was adequate.

Plaque Control and Bleeding on Probing

When is the appropriate time to evaluate a patient's oral hygiene status? Stean and Forward¹¹ reported that after 24 hours of a normal toothbrushing, plaque was visible in 12 hours in some people and easily seen in most people by 1 to 2 days. Lang et al.¹² studied toothbrushing frequency over 6 weeks and found that the group that brushed twice a day or once every 2 days maintained their gingival health. The groups brushing less frequently developed gingivitis. The classic article by Loe et al.¹³ studied 12 dental students with clinically healthy gingiva who stopped oral hygiene practices. Gingivitis developed within 10 to 21 days. After reinstatement of oral hygiene, gingival inflammation (clinical) resolved in 1 week.

A more recent study¹⁴ reported a group of teenagers with gingivitis that received a single session of ultrasonic prophylaxis and oral hygiene instructions. Results showed that the plaque index and bleeding on probing decreased consistently from baseline to 15 and 30 days.

Tooth Mobility: Occlusal Factors

Renggli and Mühlemann¹⁵ studied the reduction of tooth mobility after occlusal grinding and "curettage" in humans. A reduction in tooth mobility was evident only 30 days after occlusal therapy. In 1982, Kerry et al.¹⁶ documented that abnormal tooth mobility decreased after scaling and root planing and occlusal adjustment at 1 month. In 1980, Fleszar et al.¹⁷ documented that the relationship between tooth mobility and the post-treatment level of attachment is established by the end of the first year and becomes more pronounced by the second year. These patients received subgingival curettage and surgery.

In 1998, Ricchetti¹⁸ found that the reevaluation of mobility could be delayed for 6 to 12 months after control of the plaque-related inflammatory lesion to better determine whether mobility was due to plaque-related inflammation or to occlusal trauma. This

6- to 12-month time period permits the attachment to heal. If mobility is increasing after 6 to 12 months, then occlusal correction is required.

Furcation Involvement

We can expect a lesser response when evaluating furcated teeth (multirooted teeth) during initial therapy. A study¹⁹ reported that over 24 months in sites with initial probing depths ≥ 4 mm, molar furcation sites responded less favorably to initial therapy compared to molar flat-surface sites and non-molar sites.

HISTOLOGY

The next concern that needs to be addressed is whether clinical healing of the junctional epithelium is enough to make an adequate evaluation of underlying lamina propria.

Wound-Healing Histology: Evidence Begins

Junctional epithelium. An understanding of soft tissue healing on a clinical and histologic level is essential before a time frame can be addressed. Although the soft tissues appear to be visually healed soon after scaling and root planing, Waerhaug²⁰ documented that the reestablishment (reepithelialization) of attachment (junctional epithelium) occurred in 2 weeks using extracted teeth. Using a primate model, Caton and Zander²¹ found the attachment (junctional epithelium) between the tooth and gingival tissues was reestablished in 1 week. Stahl et al.^{22,23} reported that reepithelialization of gingival wounds resulting from instrumentation occurs within 1 to 2 weeks. Thus, it may be concluded that the evaluation of the soft tissue response should not be earlier than 2 weeks after instrumentation.⁵ Unfortunately, complete healing of periodontal tissues usually does not occur because of the unpredictability of effectiveness of debridement procedures. The percentage of surfaces having residual calculus after scaling and root planing ranges from 17% to 69%.²⁴

Gingival connective tissue. Periodontal disease is characterized by inflammation of the gingival tissues, with increasing numbers of inflammatory cells (i.e., polymorphonuclear leukocytes) replacing the volume of collagen in the lamina propria (connective tissue). During the disease process, the junctional epithelium is transformed into pocket epithelium. When a periodontal probe is inserted into the pocket of a diseased and inflamed pocket, the probe penetrates past the pocket epithelium into the connective tissue, resulting in inaccurate probing depth readings. After scaling and root planing, junctional epithelium is reestablished, and the inflammatory cells in the gingival connective tissue are replaced by collagen, resulting in increased resistance to probing force.²⁵ The connective tissue was more inflamed

adjacent to the junctional epithelium of healed tissue than healthy gingiva that was not inflamed.²⁶ If this is the case, then instead of just making allowances for epithelial healing, healing of the connective tissue needs to occur.

Waerhaug²⁰ showed that, although reestablishment of the junctional epithelium was complete within 2 weeks, the granulation tissue was still immature and not yet replaced with collagen fibers. Biagini et al.²⁷ treated patients with advanced disease and found that by 30 days (4 weeks) to 60 days (8 weeks), there were precisely oriented collagen bundle fibers.

MICROBIOLOGY

In the absence of improved plaque control, Magnusson et al.²⁸ and Mousques et al.²⁹ observed that a subgingival microbiota containing large numbers of pathogenic spirochetes and motile rods repopulated within 4 to 8 weeks.

The microbial composition of treated sites 7 days after scaling and root planing was similar to that of periodontally healthy sites, as determined by cultural and dark-field data. Differences between cultural and dark-field data became apparent at the 21-day sampling point. The dark-field data showed that the sites consisted of cocci with few spirochetes.³⁰

CONCLUSIONS

It is evident that numerous, inconclusive time periods are used to perform a reevaluation of initial therapy. The clinical evaluation of gingival tissues after scaling and root planing should be performed no sooner than 2 weeks because healing of the epithelium has not been completed. Given the references used in this article, is waiting 2 months or longer too long? With the quick repopulation of the microflora after scaling and root planing, it is possible that disease can progress with unnecessary periodontal breakdown if reevaluation is postponed.

Thus, the following key points are stated to define a definitive time period to be used postscaling that should be adopted by periodontists.

Key Points

1) After scaling and root planing, there is reestablishment of the junctional epithelium to the tooth surface in 1 to 2 weeks; reevaluation before 2 weeks is too early.

2) After scaling and root planing, the repair of connective tissue continues for 4 to 8 weeks.

3) Subgingival microbial repopulation occurs within a few months (2 months) after instrumentation of periodontal pockets in the absence of improved plaque control.

4) Longer than 2 months may be too long to wait for the reevaluation because pathogenic bacteria have already repopulated periodontal pockets.

5) Based on literature, we propose that the ideal time for reevaluation is between 4 to 8 weeks and that private practitioners and dental schools should adopt this time frame.

6) This time period for oral hygiene assessment is sufficient, although the patient's oral hygiene tends to relapse if not constantly reviewed during maintenance.^{31,32}

7) A decrease in bleeding on probing, redness, and edema occurs within our time period, especially on anterior teeth and not as well on teeth that are furcated and multirrooted.

8) The reevaluation of tooth mobility after occlusal therapy is most likely to occur after 6 to 12 months.

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Correspondence: Dr. Stuart L. Segelnick, 1603 Voorhies Ave., Second Floor, Brooklyn, NY 11235. Fax: 718/743-9145; e-mail: eperiodr@aol.com.

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