

Commentary

Enhancing Periodontal Health Through Regenerative Approaches

William V. Giannobile*[†] and Pamela K. McClain[‡]

Preservation of the natural dentition in a state of health has long been a goal in dentistry and periodontics. Recent research suggests that almost 50% of the U.S. population aged >30 years and 70% of those aged >65 years suffer from periodontal breakdown.¹ Even more compelling is the evidence that 38% of the population exhibit moderate to severe periodontitis. Because most individuals prefer maintaining their teeth and abhor the thought of dentures or other replacements, it is imperative that periodontal disease be managed early and appropriately. However, when patients present with moderate to severe disease, research suggests that tooth retention and maintenance in health is achievable with a variety of approaches, including regenerative therapy. Periodontists are the trained experts in the field of hard and soft tissue regeneration around teeth and in providing periodontal therapy for all levels of disease. However, if extraction is required, the periodontist is also qualified to replace teeth with implants and is best qualified to maintain implants and reduce or manage complications associated with implants, which have also increased.² As a result, it is critical that periodontists, as the premier providers of periodontal care, establish the potential of regeneration of the hard and soft tissues when feasible to maintain the natural dentition in lieu of replacement therapy.

This is truly an exciting time in regenerative biology as opportunities are expanded for innovations in restoring tissues lost as a result of periodontal diseases. Periodontics has a long history of reconstructive approaches to improve tooth support, enhance esthetics, and maintain periodontal health.³ Since the last American Academy of Periodontology (AAP) Consensus Workshop on the topic of regeneration held in 2003, there have been significant advance-

ments in both preclinical development and the clinical arena. New regenerative technologies for repairing periodontal soft⁴ and hard tissues for intrabony, dehiscence,⁵ and furcation defects⁶ have grown rapidly during this period. Such approaches include optimization of biomaterials, biologic factors, and the introduction of novel cell delivery systems.⁷ In this supplement to the *Journal of Periodontology*, current evidence is provided on clinical therapies designed to regenerate periodontal soft and hard tissues around teeth to promote tooth retention.⁸ The assembly of timely systematic reviews and consensus reports published in this issue of the *Journal of Periodontology* provides an opportunity to support the mission of the AAP “to provide members the expertise and resources to enhance the evaluation and diagnosis of oral conditions, assessment of risk for future disease, and delivery of specialty periodontal non-surgical, surgical, and medical care for our patients.” One of the pillars of this mission is the strong commitment by the AAP to the promotion of science and evidence-based care for practitioners delivering care to the public.

The purpose of the AAP Workshop held June 1 to 4, 2014 in Chicago, Illinois, entitled *Enhancing Periodontal Health Through Regenerative Approaches* was to advance the understanding and implementation of periodontal regenerative medicine. The state-of-the-science conference summarized the existing literature in the field, evaluated clinical applications of the science, and identified priorities for future research in periodontology. This issue of the *Journal of Periodontology* highlights those systematic reviews on periodontal soft tissue root coverage procedures,⁹ gingival enhancement or replacement for non-root coverage procedures,¹⁰ regeneration of periodontal intrabony¹¹ and furcation defects,¹² and emerging technologies in periodontal regeneration.¹³ Corresponding to these systematic reviews are consensus reports focusing on the current evidence supporting the reconstruction of lost periodontal hard and soft tissues for regeneration. Concepts that emerged in the consensus included future areas of research, such as the use of minimally invasive surgical¹⁴ and diagnostic¹⁵ procedures, as

KEY WORDS

Bone transplantation; guided tissue regeneration, periodontal; periodontal diseases; tissue engineering; wound repair.

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Table 1.

AAP Workshop on Enhancing Periodontal Health Through Regenerative Approaches: Focus Areas for Systematic Reviews and Consensus Reports

Focus Area	Contributors
AAP Workshop on Periodontal Regeneration	Organizing committee: William V. Giannobile (co-chair), Pamela K. McClain (co-chair), Kenneth S. Kornman (JOP Editor-in-Chief), Laurie K. McCauley, Michael K. McGuire, Myron Nevins, John C. Gunsolley (consultant), Marita R. Inglehart (consultant), Mariano Sanz (consultant)
Periodontal Soft Tissue Approaches Periodontal Soft Tissue Root Coverage Procedures	Workshop members: Dimitris N. Tatakis (chair), Leandro Chambrone (reviewer), Edward P. Allen, Burton Langer, Christopher R. Richardson, Ion Zabalegui, Homayoun H. Zadeh
Periodontal Soft Tissue Non-Root Coverage Procedures	Workshop members: E. Todd Scheyer (chair), David M. Kim (reviewer), Rodrigo Neiva (reviewer), Serge Dibart, Henry Greenwell, Vanchit John, Lauren Langer, Giulio Rasperini
Periodontal Hard Tissue Defects Periodontal Regeneration: Intrabony Defects	Workshop members: Mark A. Reynolds (chair), Richard T. Kao (reviewer), Salvador Nares (reviewer), Paulo M. Camargo, Jack G. Caton, Donald S. Clem, Joseph P. Fiorellini, Maria L. Geisinger, Michael P. Mills, Marc L. Nevins
Periodontal Regeneration: Furcation Defects	Workshop members: Michael S. Reddy (chair), Gustavo Avila-Ortiz (reviewer), Mary E. Aichelmann-Reidy, Perry R. Klokkevold, Kevin G. Murphy, Paul S. Rosen, Robert G. Schallhorn, Anton Sculean, Hom-Lay Wang
Emerging Regenerative Approaches for Periodontal Reconstruction	Workshop members: David L. Cochran (chair), Hector F. Rios (reviewer), Zhao Lin (reviewer), Jill D. Bashutski, Yong-Hee Patricia Chun, Charles M. Cobb, George A. Mandelaris, Bradley S. McAllister, Shinya Murakami, Martha J. Somerman

well as the consideration of patient-reported outcomes¹⁶ for periodontal reconstructive technologies.

WORKSHOP OBJECTIVES

The workshop objectives included the following: 1) provide a venue for periodontal clinicians and scientists to assess the state of knowledge of periodontal regenerative technologies; 2) develop consensus reports based on systematic reviews including priorities for future research and identify the best evidence available to manage different clinical scenarios; and 3) evaluate the range of clinical applications and expected outcomes to patient care based on the current science for publication in *Clinical Advances in Periodontics*.

The workshop contributors of the systematic reviews, consensus reports, and practical applications are shown in Table 1. The approach of this first-of-its kind workshop sought to provide practical clinical translation of current evidence. This AAP workshop model contrasts with other published systematic reviews from evidence-based workshops that only include systematic reviews and consensus summaries that are often challenging to

translate into clinical practice. This workshop provides clear summaries of evidence and multiple approaches to clinical translation through scenario-based interpretations of the systematic reviews and dynamic digital approaches to clinical translation in the Practical Applications section of an upcoming issue of *Clinical Advances in Periodontics*.

The authors believe that it is critically important for the AAP to lead the profession of periodontology in the current and emerging science for advancing the optimal care of patients. Further, they hope that the readership will appreciate this assembly of cutting-edge advances in the field that was provided by dedicated clinicians, academicians, researchers, and innovators in the field who were a part of this conference. Their tremendous dedication, insights, and expertise have resulted in what is believed will be a valuable product for periodontists for years to come. It is hoped that this workshop will also serve as an inspiration to appreciate the advances that have been made, while also recognizing there is significant distance to travel to further promote the practice of periodontics for the betterment of our patient's oral health and overall well-being.

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