The 9th International Symposium on Periodontics & Restorative Dentistry

Featuring

A Critical Review of Contemporary Clinical Treatment

Chairman

Myron Nevins, DDS

Boston, Massachusetts
June 7–10, 2007

Boston Marriott Copley Place

Final Program
Implant Dentistry, Biologic Applications, and Restorative Advances

Moderated by Richard Lazzara

Richard J. Lazzara, DMD, MScD, practices periodontics and implant dentistry in West Palm Beach, Florida. He is a clinical assistant professor at the University of Southern California School of Dentistry, an associate clinical professor at the University of Maryland Periodontal and Implant Regenerative Center, and a visiting associate professor of periodontics at the University of Pennsylvania.

Biologic and Clinical Factors for Ultimate Esthetics Around Implants

Dennis Tarnow

Ultimate esthetics requires an interdisciplinary clinical and biologic approach to treating patients. This presentation focuses on fine tuning our cases so that facial tissues and interproximal papillae will look their best and remain healthy for years to come. Restorative dentistry, periodontal plastic surgery, and orthodontics will all be discussed, along with the proper sequencing of these disciplines. In addition, new techniques in socket preservation will be evaluated along with new innovations in implant design as part of more advanced treatment plans.

Dennis Tarnow, DDS, is professor and chairman of the Department of Implant Dentistry and professor of periodontics and prosthodontics at New York University College of Dentistry. A diplomate of the American Board of Periodontology, Dr. Tarnow maintains a private practice in New York City. He has published numerous articles on peri-prosthetic implants and implant dentistry and has lectured extensively in the United States and abroad.

Case-Specific Selection of Implant Type and Surgical Technique in the Esthetic Zone

Ueli Grunder

Implant placement has become a routine surgical procedure, and good results can be achieved with a high degree of predictability. The most challenging area of treatment continues to be the esthetic zone. The recent trend to reduce treatment time can be beneficial to the esthetic outcome in some cases, but a staged approach that allows adequate healing time between treatment steps is the key to optimal esthetic results in most cases. Because of the variety of treatment options available today, the patient analysis and treatment-planning steps are even more important to the esthetic outcome. New implant designs and implant-abutment connections should reduce or eliminate unfavorable bone remodeling around the implant neck. But is this the key to success? Understanding the limitations of each technique is an essential part of treatment planning. The success of the surgical procedure depends on several important details.

Ueli Grunder, DMD, is a senior lecturer at the University of Zurich. He maintains a private practice in Zollikon-Zurich, Switzerland, and has published numerous papers and lectured nationally and internationally on the surgical and prosthetic aspects of implant dentistry. Dr. Grunder is president of the Swiss Society of Oral Implantology and president-elect of the European Academy of Esthetic Dentistry.

Optimal Implant Esthetics: Biologic Basis, Clinical Techniques, and Innovative Product Designs

Anthony Sclar

Achieving success in esthetic implant therapy requires the knowledge and diagnostic acumen to identify specific clinical scenarios that favor and/or limit esthetic outcomes; the clinical skills necessary to execute a series of properly sequenced surgical and restorative procedures; and an understanding of biologic width and the effect that implant and abutment designs potentially have on preserving the hard and soft tissue anatomy necessary for emergence of an esthetic restoration. This presentation reviews salient features related to diagnosis and treatment planning of esthetic implant cases, the anatomic and biologic basis for preservation of crestal bone and soft tissue volume at implant sites, esthetic implant site preservation and site development techniques, and the important role that new implant and abutment designs have on achieving optimal implant esthetics.

Anthony G. Sclar, DMD, maintains a private practice specializing in oral and maxillofacial surgery, orthognathic surgery, and periodontal plastic surgery. He also serves as a guest faculty member of the Pankey Institute. A highly skilled surgeon, he has developed several innovative techniques for preserving and regenerating soft tissue. Dr. Sclar lectures nationally and internationally on implant esthetics, soft tissue management, hard and soft tissue grafting, and cosmetic periodontal surgery. He served as co-editor of Soft Tissue Esthetic Procedures for Teeth and Implants (WB Saunders, 2000) and author of Soft Tissue and Esthetic Considerations in Implant Dentistry (Quintessence, 2003). He has written numerous journal articles pertaining to esthetic implant therapy.

Crestal Bone Preservation Through Platform Switching: Rationale and Clinical Applications

Tiziano Testori

Crestal bone loss around endosseous dental implants is a normal consequence of implant therapy involving two-stage implants. Investigations demonstrated that crestal bone loss typically occurs approximately 2 mm apical to the implant-abutment junction, with an associated inflammatory cell infiltrate. This presentation focuses on the clinical rationale for preservation of crestal bone in various clinical situations such as in areas where there is limited bone height, in the anterior esthetic zone, and in areas where simultaneous hard and soft tissue grafts are necessary to optimize the outcome of implant therapy.

Tiziano Testori, MD, DDS, is the head of the Division of Implant Dentistry and Oral Rehabilitation for the Galeazzi Institute at the University of Milan, Italy. He is an active member and lecturer for the Academy of Osseointegration, the president-elect of the Italian Society of Oral Surgery, a member of the editorial board for two journals, and a referee for the national committee for continuing education programs on oral surgery and implant dentistry. Dr. Testori has written over 100 scientific and clinical articles for professional journals.

Accelerated Peri-implant Endosseous Healing

John Davies

This presentation demonstrates a new treatment solution for the enhancement of inadequate alveolar bone volume. This sterile, antigen-inactivated mineralized block allograft offers a safe and unlimited source of “off-the-shelf” bone and significantly reduces the need for autogenous bone and a secondary surgical site. The new mineralized block allograft allows for the restoration of alveolar bone height and width for the functional and esthetic placement of dental implant restorations.

John E. Davies, BDS, PhD, DSc, who trained as an oral maxillofacial surgeon, is a professor of dentistry and biomaterials at the University of Toronto. Dr. Davies devised the first in vitro biologic methods to study the mechanisms of bone bonding to bioactive ceramics, leading to an understanding of the mechanisms by which bone grows on implant surfaces and within tissue engineering scaffolds. He has developed ceramics that can be resorbed by osteoclasts, calcium phosphates that stimulate increase in local bone mass, scaffolding materials for bone regeneration, and extra-embryonic cells as a potential source of cell-based connective tissue repair. He was elected a fellow of Biomaterials Science and Engineering and received the Society for Biomaterials Clemson Award for Basic Science.
Optimal Results in the Esthetic Zone with CAD/CAM Implant Abutments

George Priest

Optimal implant results in the esthetic zone can be predictably achieved using customized, patient-specific abutments. A computer-aided design and computer-assisted manufacture (CAD/CAM) implant-restore system uses a unique healing abutment with codes embedded in the occlusal surface to create a patient-specific final abutment. The final abutment form closely follows sulcular levels, contributing to a more optimal emergence profile and gingival architecture. A gold-colored titanium-nitride coating option enhances ceramic crown shades and imparts warmer hues through gingival tissues. CAD/CAM patient-specific abutments have expanded the applicability of implants in the esthetic zone by contributing to ideal marginal abutment form and maximal peri-implant support.

George Priest, DMD, maintains a full-time practice in Atlanta, Georgia. He has lectured extensively, nationally and internationally, on implant dentistry, advanced restorative dentistry, tooth-colored restorations, and aesthetic excellence. As a leader in the fields of esthetic and implant dentistry, he is recognized as an innovator in the specialty of prosthodontics and has contributed his research to many dental journals. Dr Priest is a fellow of the American College of Prosthodontists and a diplomate of the American Board of Prosthodontics.

Advances in Periodontal Diagnostics

Moderated by Roy Page

Roy C. Page, DDS, PhD, is professor emeritus of periodontics and director of the Regional Clinical Dental Research Center in the School of Dentistry and professor emeritus of pathology in the School of Medicine at the University of Washington. He holds a specialist certificate in periodontics. Dr Page is a past president of the American and International Associations of Dental Research and former editor-in-chief of the Journal of Periodontal Research. He has written over 250 scientific articles, two monographs, and a textbook on periodontics. His current research interests are improving oral health and decreasing the cost of oral health care. His contributions have been recognized by numerous awards and honors from national and international organizations.

Periodontal Evaluation/Reevaluation: Red Flags for Special Diagnostics and Management of Periodontitis

Robert Schallhorn

The presenter draws on 50 years of periodontics history to describe diagnostic thought processes and procedures during a new-patient periodontal examination, treatment planning, and evaluation for additional diagnostic measures. Patient re-evaluation during active therapy phases, maintenance care, and changes in periodontal status will also be discussed. Oral pathology, charting/documentation records, and systemic diseases will be discussed only in regard to special management of periodontitis.

Robert G. Schallhorn, DDS, MS, a diplomate of the American Board of Periodontology, maintains a private practice in periodontics. He was on active duty in the US Army as a periodontist and endodontist for 14 years and was professor and chairman of the Department of Periodontics at the University of Colorado for 7 years. He is a past president of the American Academy of Periodontology and an editorial consultant to The International Journal of Periodontics & Restorative Dentistry.

The Future of Dentistry: Integrating Medicine into the Clinical Practice of Dentistry

Louis Rose

This clinically relevant presentation will emphasize the impact of periodontal medicine on the practice of dentistry. Concepts of periodontal health and disease are dramatically changing. In order to establish an appropriate diagnosis and treatment, the clinician must understand chronic inflammation and its role in systemic health, as well as the importance of major risk factors for periodontal disease. Special attention will be devoted to new evidence in this area and to the most effective systemic and topical means to combat chronic inflammation. Dental professionals have an ethical responsibility to educate the public and our medical colleagues about medically necessary dental care in order to treat periodontal disease and provide quality patient care.

Louis F. Rose, DDS, MD, is professor of surgery at MCP Hahnemann School of Medicine, clinical professor of periodontics at the University of Pennsylvania, and professor of periodontics at New York University. He is on the faculty of the Harvard School of Dental Medicine and maintains a private practice limited to periodontics and implant dentistry. Dr Rose is a diplomate of the American Board of Periodontology and serves on the editorial boards of five journals, including The International Journal of Periodontics & Restorative Dentistry. He lectures nationally and internationally on periodontics, implant dentistry, and medicine and has published extensively on these subjects.

Periodontal Disease As a Risk for Systemic Disease

Ray Williams

Early in the 20th century, dentists and physicians believed that oral infection or sepsis caused or contributed to most human diseases. By mid-century it was apparent that oral infection or sepsis could not explain all of mankind’s diseases, and interest in the relationship between oral disease and systemic disease waned. Then in 1989, a series of intriguing reports from Finland indicated that oral infections such as periodontal disease might be a contributor to systemic disease. Modern epidemiologic methodology employing large data sets suggest that there is a significant link between chronic periodontitis in adults and cardiovascular disease, diabetes, pulmonary disease, and preterm low-birth-weight infants. We are beginning to understand the biologic plausibility of such a relationship, and intervention trials now being conducted provide compelling evidence that treating periodontitis will reduce systemic disease. Clearly, a new role for dental professionals in assuring patients’ total health is quickly emerging.

Ray C. Williams, DMD, is the Straumann Distinguished Professor and chair of the Department of Periodontology at the School of Dentistry at the University of North Carolina at Chapel Hill. He holds a specialist certificate in periodontology and oral medicine. He is on the editorial board of three journals, and is chair of the advisory board of a fourth. His major research interests include pharmacologic intervention of the progression of periodontal disease; the risk for periodontitis; and periodontitis as a risk for systemic conditions and wound healing around teeth and around dental implants. Dr Williams has authored or co-authored over 200 papers and abstracts on his work.
Diagnosis of Periodontal Disease: Implications for Maternal and Child Health

**Steven Offenbacher**

Case-control studies have suggested that there is a significant association between maternal periodontal disease and pregnancy complications that result in preterm delivery (gestational age under 37 weeks) and low birth weight (under 2,500 g). These case-control studies have now been confirmed by three prospective studies that suggest periodontal disease independently enhances the risk of obstetric complications including preterm birth, growth restriction (birth weight less than 10th percentile for weight for gestational age), pre-eclampsia, and very-preterm birth (delivery at less than 32 weeks gestation). Periodontal disease represents a risk for these adverse pregnancy outcomes even after adjusting for a range of potential factors, including previous history of preterm birth, parity, maternal weight gain, smoking, and other infections. Data suggest that maternal periodontal infections may represent a risk factor for preterm birth and growth restriction by serving as an infectious and inflammatory exposure to the placenta and fetus during pregnancy. This infectious and inflammatory stress resulting from the toxicity of the oral biofilm appears to increase neonatal morbidity and may have life-long effects on the child’s health.

Steven Offenbacher, DDS, PhD, MMSc, is professor and director of the Center for Oral and Systemic Diseases at the School of Dentistry at the University of North Carolina and is the school’s first OralPharma Distinguished Professor of Periodontal Medicine. He is recognized as an international expert and lecturer on periodontology and systemic diseases. His research focuses on molecular epidemiology to investigate the relationship of periodontal disease to premature birth, atherosclerosis, heart disease, and diabetes; pharmacologic modification of the host response to treat periodontal diseases; and periodontal clinical trials to improve cardiovascular and diabetic health and pregnancy outcomes. Dr Offenbacher has written over 165 papers, articles, and book chapters and is credited with 6 patents. He serves on the editorial boards of three journals.

Clinical Assessment and Treatment of the Diabetic Patient

**Brian Mealey**

More than 20 million Americans have diabetes, and these individuals frequently present for dental treatment. Dentists need to understand the recent changes in medical management of diabetes and the role these changes play in dental patient care. This lecture briefly examines the relationship between diabetes and periodontal health; it then shifts to a clinical focus and emphasizes current medical therapies for diabetes, periodontal treatment pathways for these patients, prevention and management of diabetic emergencies, and potential impact of diabetes on outcomes of periodontal therapy.

Brian Mealey, DDS, MS, is an associate professor and director of the residency program in the Department of Periodontics at the University of Texas Health Science Center at San Antonio as well as an adjunct associate professor of Periodontics at Baylor College of Dentistry at Texas A&M University Health System in Dallas. He served 21 years in the United States Air Force and was the chair and residency program director of the Department of Periodontics at Wilford Hall Medical Center in San Antonio. Dr Mealey is the co-editor and author of two periodontics textbooks and has written over 60 articles, abstracts, and textbook chapters with an emphasis on interrelationships between oral and systemic health. He is a diplomate of the American Board of Periodontology.

Refractory Periodontitis and Genetics

**Joseph Fiorellini**

While long-term studies have demonstrated that the vast majority of chronic periodontitis patients respond well to conventional periodontal therapies, some respond poorly and continue to lose attachment and alveolar bone despite the best efforts of the practitioner to control the disease. There are no specific bacterial profiles or diagnostic tests capable of identifying patients at risk for periodontitis before or after a treatment regimen. Host factors that may be partly under genetic control could play a crucial role in the susceptibility of this high-risk cohort of patients. Specifically, patients with nonresponsive chronic periodontitis may have multiple upregulated and/or downregulated genes influencing their clinical risk.

Joseph P. Fiorellini, DMD, DMSc, is program director of the Department of Periodontology at the University of Pennsylvania School of Dental Medicine. He serves on the editorial boards of the Journal of Periodontology and The International Journal of Periodontics & Restorative Dentistry and was the 1994 recipient of the American Academy of Periodontology’s Young Investigator Award. Dr Fiorellini’s areas of research include wound healing around endosseous implant materials, systemic illness, treatment of failing implants, and periodontal diagnostics.

The Oral Bisphosphonate Patient: Assessment of Risk, Prevention, and Management

**Robert Marx**

Patients taking oral bisphosphonates bear a risk of developing nonhealing exposed bone (bisphosphonate-induced osteonecrosis) following an invasive oral surgical procedure and present a challenge to the practitioner managing such osteonecrosis once it develops. Oral bisphosphonate–induced osteonecrosis of the jaws differs significantly from intravenous bisphosphonate–induced osteonecrosis: the osteonecrosis from oral bisphosphonates—primarily alendronate, (Fosamax) and to a lesser degree residronate (Actonel)—is less severe, more responsive to therapy, and its risk is predictable. Moreover, its incidence is judged to be 0.007% to 0.01% as compared to 0.8% to 12% for intravenous bisphosphonate–induced osteonecrosis. This presentation describes a simple blood test that can be used to assess the risk of patients on oral bisphosphonate therapy for developing osteonecrosis before they undergo any elective oral surgical procedures. This test can also be used in patients with established oral bisphosphonate–induced osteonecrosis and those who have not yet begun a prescribed course of bisphosphonate therapy to guide decision-making about the appropriateness of recommending a “drug holiday” to the patient’s treating physician or the timing of necessary dental procedures. Specific protocols for managing patients with exposed bone and recommendations for preventative measures will also be presented.

Robert E. Marx, DDS, is professor of surgery and chief of the Division of Oral and Maxillofacial Surgery at the University of Miami School of Medicine. His areas of research include the use of hyperbaric oxygen following radiation therapy, the development of platelet-rich plasma, and the relationship between smoking and carcinogenesis. Dr Marx has received numerous awards, including the Harry S. Archer Award, the William J. Cies Award, the Paul Bert Award, and the Donald B. Osbon Award. His recent textbook, Oral and Maxillofacial Pathology: A Rationale for Diagnosis and Treatment (Quintessence, 2002), won the American Medical Writers Association’s Best Medical Book of the Year Award for 2003.
Clinical Application of Bone-Forming Technologies

Moderated by Myron Spector

Myron Spector, PhD, is professor of orthopedic surgery (biomaterials) at Harvard Medical School and director of orthopedic research at Brigham and Women’s Hospital in Boston. He also serves as director of tissue engineering for the VA Boston Healthcare System and as a lecturer at the Massachusetts Institute of Technology. Dr Spector is the recipient of the Veterans Administration Research Career Scientist Award and the author of numerous publications. His research interests include musculoskeletal tissue engineering, the healing of musculoskeletal tissues, and tissue response to implants.

Novel Approaches to Bone Tissue Engineering

Myron Spector

The types of tissue engineering “tools” that we need have become well understood: biomaterial scaffolds; exogenous cells; and molecular regulators such as growth factors and antagonists to inhibitors of regeneration, and their genes. Novel approaches to bone tissue engineering relate to the ways in which the tools are combined to treat specific disorders and improvements in the tools themselves. While bone has the potential to regenerate spontaneously, certain factors related to the location and size of the defect complicate this process. Small periodontal defects can regenerate through the use of membranes for guided tissue regeneration and/or placement of scaffolds in porous sponge-like or particulate form. When the defects involve the furcation of the tooth, selected growth factors may be of value in stimulating bone regeneration and in facilitating regeneration of cementum and the periodontal ligament. Growth factors may also be required to stimulate bone formation in larger defects in the mandible and maxilla. Genes can be bound to certain biomaterial scaffolds to be released in vivo over a period of weeks to genetically modify cells in the defect to produce the desired growth factors. Other novel tissue engineering approaches may be to implant osteogenic cells prepared intraoperatively or derived from cells expanded in number in monolayer culture, as is being investigated in other surgical specialties. The biomaterial scaffold has played a central role in bone tissue engineering. Work is now being directed toward use of scaffolds as regulators of cell function. There are many novel ways in which the tissue engineering technology toolbox is being improved. There is every expectation that these improvements will result in more effective treatment for many periodontal and oral/maxillofacial surgical procedures.

Bench to Bedside Process for Product Development

Jeffrey Hollinger

This presentation outlines the process by which a therapeutic concept for a clinical indication to regenerate bone is taken from the laboratory bench, through in vitro and in vivo testing, and to the clinic. A prototype therapy known as GEM 21S (BioMimetic Therapeutics) has been approved by the US Food and Drug Administration (FDA) and consists of recombinant human platelet-derived growth factor BB homodimer (rhPDGF-BB) and beta-tricalcium phosphate (β-TCP). A brief overview of bone wound and rhPDGF-BB biology is presented, as well as the rationale for selecting β-TCP as a carrier for rhPDGF-BB. In vitro assays that are relevant to the clinical target will be shown and thereafter will include clinical examples. The integration of regulatory issues germane to the bench-to-bedside process for product development and the FDA will be highlighted as well.

Combining Bone Graft Materials with Bone-Inductive Proteins

James Mellonig

This presentation presents the evidence for combining bone-inductive proteins and growth factors with currently available bone graft materials to enhance wound healing and improve clinical results. Supporting clinical and histologic data will be provided.

Regeneration of Infrabony Defects Using Bio-Oss and Bio-Gide in Comparison to Conventional Flap Debridement

Niklaus Lang

Several studies have shown that it is possible to regenerate periodontal attachment in localized infrabony defects—including formation of new root cementum, periodontal ligament, and alveolar bone—via guided tissue regeneration (GTR). Moreover, to achieve this goal, several principles have been proven to be effective to various degrees. However, in many instances the magnitude of the benefits remain unsatisfactory. Similar effects have been obtained using grafts with or without the potential of contributing to osteoinduction but providing scaffolds for bone formation and acting through osteoconduction. With the exception of polyactic acid (PLA) granules, the use of graft materials or the application of a biologic agent produced a more favorable clinical attachment level (CAL) and probing depth change at infrabony defects than open flap debridement alone. In a multicenter randomized controlled clinical trial in infrabony defects, 122 subjects in 10 centers and 7 countries participated in a comparison of open flap debridement versus combination therapy with Bio-Oss and Bio-Gide (Osteohealth). Clinical outcomes yielded 3.3 mm CAL gain for the combination versus 2.5 mm for the control therapy. Probing depth reduction was 3.7 mm in the test and 3.2 mm in the control sites. Control sites showed 0.7 mm while the test sites had 0.3 mm of recession. All of these differences were statistically and clinically significant. The results have demonstrated that combination therapy is superior to open flap debridement in infrabony defects.

Jeffrey O. Hollinger, DDS, PhD, is director of the Bone Tissue Engineering Center (BTEC) at Carnegie Mellon University and a tenured professor of biomedical engineering and biological sciences. He is also a professor of orthopedics and plastic surgery at the University of Pittsburgh, has an adjunct appointment at the McGowan Institute for Regenerative Medicine, and is an associate director for the Pittsburgh Tissue Engineering Initiative. He is a former chairman of physiology and director for the bone program at Walter Reed Army Institute of Research in Washington, DC. Dr Hollinger’s research focuses on bone tissue engineering, and he has published numerous articles and texts.

Niklaus P. Lang, DDS, MS, PhD, is professor and chairman of the School of Dental Medicine at the University of Berne, Switzerland. His special research interests include oral microbiology; prevention, epidemiology, pathogenesis, and therapy of periodontal and peri-implant diseases; clinical research; diagnostic procedures and risk assessment; and biology of wound healing around dental implants. He has published nearly 400 articles in peer-reviewed scientific journals, and delivered more than 1,500 lectures on five continents. Dr Lang serves as editor-in-chief of Clinical Oral Implants Research and editor of Oral Health and Preventive Dentistry.
Use of Xenografts for Sinus Augmentations
Stuart Froum

The presentation will describe the uses of various common xenograft materials for sinus augmentations in the context of evidence-based data. The biologic rationale for use of xenograft materials (bone replacement grafts and membrane barriers) will be presented, including safety issues and clinical, histologic, and histomorphometric data. Factors that contribute to implant success will be reviewed along with comparisons to other commonly used techniques and materials.

Stuart Froum, DDS, is the director of clinical research for the Department of Implant Dentistry at the New York University Dental Center and a clinical professor in the departments of Surgical Sciences and Implant Dentistry. A diplomate of the American Society of Osseointegration and the International Congress of Oral Implantologists, Dr. Froum serves on the editorial board of the Middle East Journal of Oral and Maxillofacial Surgery.

Selection of Barrier Membranes and Bone Fillers to Optimize Outcomes with the Guided Bone Regeneration Technique
Daniel Buser

The selection of appropriate biomaterials is most important for optimizing outcomes with the guided bone regeneration (GBR) technique. In 1988, the GBR technique was originally developed with bioinert expanded polytetrafluoroethylene (e-PTFE) membranes to create a secluded space filled with a blood clot. Since then, major efforts have been made to improve treatment outcomes with the GBR technique. The objectives of these efforts were to improve the predictability for successful outcomes, reduce the risk of complications, and make these procedures more user-friendly for clinicians. This progress was feasible with improved surgical techniques, but also with better biomaterials. This lecture will review the progress in the past 18 years and present the current knowledge and clinical applications with the GBR technique. For the selection of an appropriate barrier membrane, aspects of biocompatibility, longevity of barrier function, susceptibility for complications, and clinical handling during surgery will be discussed. It seems that clinicians today prefer bioresorbable collagen membranes since they offer several advantages when compared with bioinert e-PTFE membranes. Bioresorbable collagen membranes must be combined with appropriate bone fillers to avoid membrane collapse and to enhance new bone formation in the membrane-protected space. Bone fillers are characterized by their osteogenic potential, their osteoconductivity, their physical stability and size, and their substitution rate during bone remodeling. Since local bone augmentation is predominantly used for contour augmentation around endosseous implants, bone fillers with a low substitution rate are often preferred today. They are often combined with autogenous bone chips with a high osteogenic potential.

Daniel Buser, PD, Dr Med Dent, is professor and chairman of the Department of Oral Surgery and Stomatology at the University of Berne in Switzerland. His main research areas are bone regeneration around endosseous implants, surface technology, and guided bone regeneration. He has authored or co-authored approximately 180 publications. He is president of the Swiss Society of Oral Surgery and Stomatology and a past president of the European Association for Osseointegration and the Swiss Society of Oral Implantology. Dr Buser has received awards from several professional organizations.

Clinical Application of rhBMP-2
Alan Herford

The development of recombinant human bone morphogenetic proteins (rhBMPs) offers an alternative to traditional bone grafting, which has long been considered the gold standard. From an oral and maxillofacial standpoint, rhBMP-2 has been used successfully in subhuman primates to restore hemisected mandibles and other large critical-sized defects. rhBMP-2 has also been used successfully in simulated alveolar clefts as well as in combination with distraction osteogenesis for alveolar bone reconstruction. A prospective human multicenter clinical study demonstrated that rhBMP-2 was successful in inducing bone formation in the maxillary sinus prior to root-form implant placement. Clinical human application of rhBMP-2 continues to evolve in improving the treatment of different areas of the facial skeleton, particularly segmental defects. This presentation describes the promising results, limitations, and future applications of this cytokine growth factor. In the future, the use of exogenous cytokines, particularly those of the BMP series, will become common, and the regeneration of many types of oral/maxillofacial osseous deficiencies will likely be brought about through a routinely accepted clinical outpatient procedure.

Alan S. Herford, DDS, MD, is the chairman and residency program director of the Department of Oral and Maxillofacial Surgery at Loma Linda University School of Dentistry. He is the author of more than 20 peer-reviewed scientific publications on topics ranging from reconstructing skin cancer defects to distraction osteogenesis. He has also written book chapters on treatment of mandibular fractures, facial flaps, and treatment of soft tissue injuries. Dr Herford has presented his original research at both national and international meetings. His clinical interests are reconstructive surgery, maxillofacial trauma, and esthetic surgery.

Use of rhPDGF-2 for Bone Regeneration: Preclinical and Clinical Observations
Massimo Simion

In the last few years the esthetic result of the final prosthetic restoration has become one of the most fascinating challenges in implant dentistry. Indeed, the implant position is now driven more by the prosthetic request than by the quantity and morphology of the available bone. The biologic concepts of guided bone regeneration (GBR) in the last 10 to 15 years have played a major role in the improvement of esthetic outcomes. An accurate diagnosis based on a multidisciplinary approach, including periodontal, prosthetic, and surgical parameters, is crucial. The periodontal evaluation must consider factors relating to the patient’s periodontal health and anatomy like the periodontium biotype, amount of keratinized gingiva and mucosa, and height and width of the available bone. Prosthetic treatment planning must consider cosmetics, phonetics, and function. Placement of the implant in a proper position is essential for at least four reasons: (1) the emerging profile of the final prosthetic restoration is influenced by the position of the implant; (2) a sufficient amount of bone must be maintained on the buccal, mesial, and distal aspects of the implant; (3) there must be minimal discrepancy between the axis of the crown and the axis of the fixture; and (4) proper biologic width must be respected. Regenerative techniques have recently been improved with the introduction of more effective barrier membranes, osteoconductive biomaterials, bone- and soft tissue–stimulating growth factors like platelet-derived growth factor (PDGF), and the development of new surgical procedures. These new techniques, allowing bone regeneration vertically in a coronal direction, substantially improve the final functional esthetic outcomes. All of these techniques will be described during the lecture.

Massimo Simion, MD, DDS, is professor and co-chairman of the Department of Periodontology and Implant Restoration at the University of Milan. Dr Simion is the founder of the Italian Society of Osseointegration and an active member of the Italian Society of Periodontology. He is a board member and past president of the European Association for Osseointegration. Dr Simion has published several papers and lectures internationally on periodontology, osseointegration, and ridge augmentation.
Autogenous block grafting must be integrated into treatment planning by today’s implant surgeon to effectively treat patients with compromised implant sites. This clinically oriented, hands-on technical course will draw from the presenter’s experience with more than 500 block grafts over an 11-year time frame and will include results of a 5-year retrospective study of 98 patients, 115 grafts, and 206 implants. The indications, contraindications, surgical protocol, histology complications, and 5-year retrospective study data will be presented to show that autogenous block grafting can serve as a biologic and biomechanical foundation for optimal implant placement. Symphysis and ramus buccal shelf donor sites for horizontal and vertical alveolar ridge augmentation will be compared and contrasted. The application of growth factors derived from platelet-rich plasma will also be covered.

Michael A. Pikos, DDS, is a diplomate of the American Board of Oral and Maxillofacial Surgery, the American Board of Oral Implantology/Implant Dentistry, the International Congress of Oral Implantologists, and the American Society of Osseointegration. He serves as an adjunct assistant professor of oral and maxillofacial surgery at the University of Miami, Ohio State University, and Nova Southeastern University and as a courtesy clinical associate professor of periodontology at the University of Florida. Dr Pikos has written and lectured nationally and internationally on dental implants and maintains a private practice limited to implant surgery in Palm Harbor, Florida.

The Art and Science of Mandibular Block Autografts
Michael A. Pikos
Autogenous block grafting must be integrated into treatment planning by today’s implant surgeon to effectively treat patients with compromised implant sites. This clinically oriented, hands-on technical course will draw from the presenter’s experience with more than 500 block grafts over an 11-year time frame and will include results of a 5-year retrospective study of 98 patients, 115 grafts, and 206 implants. The indications, contraindications, surgical protocol, histology complications, and 5-year retrospective study data will be presented to show that autogenous block grafting can serve as a biologic and biomechanical foundation for optimal implant placement. Symphysis and ramus buccal shelf donor sites for horizontal and vertical alveolar ridge augmentation will be compared and contrasted. The application of growth factors derived from platelet-rich plasma will also be covered.

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Predictable Single-Tooth Peri-implant Esthetics: Five Diagnostic Keys
John Kois
The creation of an esthetic implant restoration with gingival architecture that harmonizes with the adjacent dentition is a formidable challenge. The predictability of the peri-implant esthetic outcome may ultimately be determined by the patient’s presenting anatomy rather than the clinician’s ability to manage state-of-the-art procedures. To more accurately predict the peri-implant esthetic outcome before removing a failing tooth, five diagnostic keys are discussed: relative tooth position, form and biotype of the periodontium, tooth shape, and position of the osseous crest. The combination of factors that creates favorable or unfavorable treatment results and the proactive clinical procedures needed for determining the desired therapeutic outcome will be presented.

John C. Kois, DMD, MSD, maintains a private practice limited to prostodontics in Tacoma, Washington, and is an assistant professor in the graduate restorative program at the University of Washington in Seattle. Dr Kois lectures internationally and is a reviewer for The International Journal of Prosthodontics and a member of the editorial boards for The Compendium of Continuing Education in Dentistry and The International Journal of Periodontics & Restorative Dentistry.

The Last Frontier in Periodontics
David Garber
The combination of innovative new ceramic systems with creative periodontal plastic procedures has changed the face of dental esthetics. Results not contemplated a few years ago have today become routine. However, the nemesia of any restorative endeavor remains the three-dimensional architecture and color of the soft tissue restorative interface comprising the papillae, the free gingival margin, and the buccolingual ridge eminence.

David A. Garber, DMD, is professor of periodontics and oral rehabilitation at the Medical College of Georgia School of Dentistry and serves on the faculties of the Department of Prosthodontics at Louisiana State University and the Department of Restorative Dentistry at the University of Texas in San Antonio. He is co-author of Imaging in Esthetic Dentistry (Quintessence, 1998), Porcelain and Laminate Veneers (Quintessence, 1998), Complete Dental Bleaching (Quintessence, 1995), and Porcelain and Composite Inlays and Onlays (Quintessence, 1993).
Interdisciplinary Management of Complex Cases to Achieve Optimal Esthetics

Masao Yamazaki / Masana Suzuki

To achieve optimal esthetics, a team approach concept is essential. This team should include (but not be limited to) a restorative dentist, periodontist, orthodontist, and oral/maxillofacial surgeon. As patient demands for esthetic outcome increase, communication and mutual understanding of treatment goals between different treatment providers become increasingly important. In this presentation, communication and collaboration between the restorative dentist and the periodontist will be addressed using challenging clinical cases.

Masao Yamazaki, DDS, maintains a full-time private practice in Tokyo, Japan. He is the founder and director of the Society of Japan Clinical Dentistry. Dr. Yamazaki is the author of Esthetic-Restorative Treatment: Management for the Complex Prosthesis (Quintessence) (available in Japanese and German).

Masana Suzuki, DDS, earned his dental degree from the School of Dentistry at Nippon University, Tokyo, Japan. He maintains a full-time private practice in Tokyo. Dr. Suzuki is an instructor of the Japan Clinical Periodontology Association and the president of the Society of Japan Clinical Dentistry Tokyo. He is the author of several publications on periodontal microsurgery and periodontal disease.

Avoiding and Managing Complications in Esthetic Implant Therapy

Anthony Sclar

In its simplest terms, an esthetic implant complication is defined as the failure to deliver an inconspicuous dental replacement in an area of high esthetic concern as defined by the patient. Although the course of action required to deliver a natural-appearing implant restoration may seem straightforward, it has rightly been suggested that the delivery of esthetic implant restorations should be considered a complex treatment modality requiring advanced training and experience. Providing acceptable esthetics for patients who desire implant replacements requires in-depth knowledge of biologic mechanisms, superior patient management skills, and highly developed diagnostic acumen. Therefore, it is imperative that clinicians who want to provide esthetic implant therapy qualify themselves by obtaining additional education and experience. Doing so will reduce the incidence of avoidable esthetic implant complications for their patients and eventually protect the status of implant dentistry and remove professional bias that currently limits the availability of esthetic implant therapy as a viable option for many patients. A small number of esthetic complications and failures are inevitable, and treating clinicians must be familiar with strategies for their management. A plastic and reconstructive surgery approach is followed when previous complications or failures are responsible for the loss of soft and hard tissue ridge volume. Soft tissue augmentation is often performed as the first procedure: as a means of testing the regenerative potential of the site, to improve the reconstructive soft tissue envelope in preparation for subsequent hard and soft tissue site development procedures, and as an aid to restore patient confidence. Pedicle soft tissue flaps such as the VIP-CT flap are indispensable in the reconstruction of compromised esthetic sites. The presence of vertical ridge deficiencies may require distraction osteogenesis or alveolar osteotomy with interpositional bone grafting prior to horizontal ridge reconstruction. Increased healing times are allotted between surgical interventions. Should a significant treatment setback occur, consideration is given to proceeding with a conventional dental restoration. Camouflage techniques such asesthetic crown lengthening and cosmetic restoration of adjacent dentition are often required in order to deliver a harmonious final prosthesis, whether traditional or implant borne.

3-D Bone Augmentation for Dental Implants

Moderated by Louis Rose

See page 22 for bio.

Complications of Grafting: A Critical Evaluation of Graft Failures

Jay Malmquist

Approximately 90% of all anterior maxillary implant sites do not have adequate bone for correct positioning of the implant. This, coupled with the intense interest in posterior maxillary and mandibular reconstruction with implant therapy, has significantly increased the number of graft procedures performed by implant surgeons. These graft procedures have led to an overall increased platform for implant placement and have facilitated an increased number of implants being placed. Many of the grafts fail in their early stages or do not provide the full potential of the desired result. This discussion focuses on the reasons for grafting and more importantly on the reasons that grafting fails both in the hard tissue and soft tissue windows. Graft success protocol will be stressed and the reasons for failure outlined. A list of complications will be delineated and a subsequent outline for avoidance of failures will be reviewed. Preoperative, intraoperative, and postoperative timetables will be used to compartmentalize the grafting failures. Finally, a comparison of grafting materials and embryonic origin will be reviewed as to indications for implant platform site formation.

Jay P. Malmquist, DMD, is associate professor of oral and general pathology and oral and maxillofacial surgery at Oregon Health Sciences University. He also maintains a private practice limited to oral and maxillofacial surgery in Portland, Oregon. Dr. Malmquist is a diplomate of the American Board of Oral and Maxillofacial Surgery, the National Dental Board of Anesthesiology, and the International Congress of Oral Implantologists.

Esthetic Zone Reconstruction: Synergy of Interactive Computerized Tomography Hard and Soft Tissue Grafting

Michael Pikos

The loss of alveolar ridge contour in the esthetic zone compromises both esthetics and function. This clinical presentation focuses on the application of both hard and soft tissue grafting in the esthetic zone, implementing state-of-the-art interactive computerized tomography (CT) diagnosis and treatment planning for optimal esthetic implant reconstruction. Emphasis will be on indications, graft and harvest site assessment, timing, use of platelet-rich plasma, surgical protocol using mandibular block autografts in conjunction with connective tissue grafts, acellular dermis matrix, and related soft tissue procedures to avoid functional and esthetic pitfalls. Pre-and post-grafting prosthetic workup, interactive CT graft assessment and prosthetic-driven implant planning, stent-driven implant placement, and computer-milled abutment fabrication will be featured. Both single- and multiple-tooth cases will be presented.

See page 26 for bio.
Enhancing Bone Height and Width with Puros Block Allografts

J. Daulton Keith

Over several decades regenerative therapy has become more clinically predictable with histologic proof of principle evidence of regeneration. While individual therapies have demonstrated success in specific intrabony defects, combination therapies have shown successful outcomes in more complex lesions. The rationale of combination therapy is based on enhancing the advantages and minimizing the limitations of individual regenerative therapies. Comparative outcomes of regenerative techniques in furcation defects will be presented along with factors influencing success for regenerative therapies in other complex osseous defects.

J. Daulton Keith, Jr, DDS, is a clinical professor in the General Dentistry and Periodontal Residency programs at the Medical University of South Carolina and maintains a private practice in periodontics in Charleston, South Carolina. He has published several articles on implants and bone grafting and lectures nationally and internationally on advanced surgical and prosthesis implant procedures and on achieving long-term clinical success.

Three-Dimensional Ridge Augmentation in Esthetic Implant Restorations

Massimo Simion

Upon completion of this course, participants should be able to diagnose and treatment plan both single- and multiple-tooth replacement in the esthetic zone; understand the application of interactive computerized tomography (CT) imaging in the development of prosthetic-driven implant placement in the esthetic zone; describe the indications for and sequencing of hard and soft tissue grafting in the esthetic zone; and understand the role and surgical protocol of mandibular block autografts, connective tissue grafts, acellular dermal matrix, and use of platelet-rich plasma in the esthetic zone.

See page 25 for bio.

Bone Grafting Around Dental Implants: A Biological, Clinical, and Implant Design Challenge

Sascha Jovanovic

Guided bone regeneration (GBR) is a regenerative procedure derived from guided tissue regeneration (GTR) around natural teeth and used for ridge augmentation prior to or in conjunction with osseointegrated implant placement. To improve treatment outcome and predictability of GBR procedures, we must reduce or eliminate complications encountered in such procedures. One of the observed and most threatening negative outcomes that may occur is early membrane exposure with bacterial contamination, resulting in failure or incomplete success of the procedure. This is particularly evident when using nonresorbable membranes. The main advantage in using these membranes is the possibility to keep them in situ for the needed time period for the healing process to occur. The lecture will illustrate different techniques for three-dimensional bone ridge augmentation according to the most current knowledge.

Sascha A. Jovanovic, DDS, MS, specializes in dental implant therapy and bone and soft tissue reconstruction at the University of California Los Angeles School of Dentistry. He is the immediate past president of the European Association for Osseointegration and president-elect of the Osseointegration Foundation. He has lectured extensively worldwide and has published more than 60 articles and book chapters as well as a textbook, Color Atlas of Implantology (Thieme). He also serves on the editorial boards of several scientific journals. Recently, he introduced a comprehensive online implant education site.

Periodontal Regeneration: Materials, Methods, and Results

Moderated by Arnold Binderman

Arnold F. Binderman, DDS, MSD, received his DDS from Temple University College of Dentistry and his master's degree from the Boston University School of Graduate Dentistry. He practices periodontics in the graduate department of periodontics at the University of Michigan and Harvard University dental schools.

Changing Tooth Prognosis with Periodontal Regeneration: Evidence and Practice

Maurizio Tonetti

Periodontal regeneration is a powerful technology that allows changing the prognosis of compromised teeth. In this presentation the scientific evidence and the clinical rationale for choosing this treatment option will be discussed. The presentation will then focus on how to render periodontal regeneration predictably in practice. Factors affecting variability as well as the advantages and limitations of different materials will be discussed. The use of papilla preservation flaps, microsurgery, and minimally invasive approaches will be illustrated in terms of both clinical and patient outcomes. Scientific evidence and clinical experience will then be used to provide a rational, step-by-step approach: from case diagnosis, to choice of material, and surgical approach.

Maurizio Tonetti, DMD, PhD, MMSc, is professor and head of the Department of Periodontology at the Eastman Dental Institute and Hospital, University College, London. He has authored many publications and lectured worldwide; his research focuses on the pathogenesis of periodontal diseases, periodontal regeneration, and periodontal pharmacotherapeutics. Dr Tonetti maintains a private practice limited to periodontics and implantology in London and Genoa, Italy.
Managing Complex Osseous Defects Using Combination Regenerative Therapy

Pamela McClain

Over several decades, regenerative therapy has become more clinically predictable with histologic proof of principle evidence of regeneration. While individual therapies have demonstrated success in specific intrabony defects, combination therapies have shown successful outcomes in more complex lesions. The rationale of combination therapy is based on enhancing the advantages and minimizing the limitations of individual regenerative therapies. Comparative outcomes of regenerative techniques in furcation defects will be presented along with factors influencing success for regenerative therapies in other complex osseous defects.

Pamela K. McClain, DDS, has maintained a full-time private practice in periodontics since 1987. She is a diplomate of the American Board of Periodontology, a clinical assistant professor at the University of Colorado School of Dentistry, and past president of the Rocky Mountain Society of Periodontists. Dr McClain has been active on numerous committees of the American Academy of Periodontology and has lectured on a variety of topics. She has several publications in professional journals and books.

Periodontal Regeneration with What Materials? State of the Art

James Mellonig

This presentation evaluates currently available periodontal bone graft materials to determine which grafts do and do not result in an outcome of new bone, cementum, and periodontal ligaments.

See page 24 for bio.

Surgical Approaches to Enhance Esthetic Periodontal Regenerative Outcomes

Giulio Rasperini

Managing patient demands for highly esthetic and functional periodontal reconstructive outcomes is a major challenge. The anterior esthetic zone is a particularly important area for the delivery of highly predictable regenerative therapies. Optimized existing and emerging surgical techniques such as guided tissue regeneration (GTR), periodontal tissue engineering by means of growth factors, and modified and simplified papilla preservation techniques offer innovative solutions to address high-level patient esthetic requirements. This presentation will highlight reconstructive approaches and discuss the importance of careful presurgical treatment planning necessary to avoid postoperative esthetic failures. Emphasis will be given to the importance of the multidisciplinary approach, including periodontal, prosthetic, orthodontic, and surgical parameters. The presentation will conclude with a demonstration of key elements of surgical techniques including flap design, suturing techniques, and wound management critical for enhancing periodontal wound repair and maximizing esthetic outcomes.

Giulio Rasperini, DDS, is assistant professor in the Department of Periodontology and in the School of Oral Hygiene and a lecturer on oral surgery and implantology at the University of Milan as well as a lecturer in periodontology at the University of La Sapienza, Rome. He holds a specialist certificate in orthodontics. Dr Rasperini has lectured in Europe and the United States on topics in periodontology and implant dentistry. He has written or co-authored over 150 articles on periodontology, esthetics, and implant dentistry, contributed to numerous textbooks, and currently serves on the editorial board for two dental journals.

Regenerative and Esthetic Advances in Periodontal Therapy

Marc Nevins

Emerging therapies with growth factors have the potential to enhance clinical options for tissue reconstruction. Results of clinical trials with recombinant human platelet-derived growth factor BB (rhPDGF-BB) will be presented. These emerging therapies will help us provide patients with three-dimensional hard and soft tissue regenerative therapy for periodontal and implant applications. Techniques using combined hard and soft tissue grafting for periodontal and implant applications will be presented. Application of tissue engineering to clinical decision-making allows optimal biologic esthetic results to be achieved in challenging periodontal and implant cases. Cases will be presented to demonstrate simplified approaches to challenging situations.

Marc L. Nevins, DMD, MMSc, is a diplomate of the American Board of Periodontology. He is a clinical instructor in periodontology at the Harvard School of Dental Medicine and maintains a private practice limited to periodontics and implant dentistry in Boston. Dr Nevins has research interests in the fields of periodontal regeneration and the alteration of osseointegration in diabetes.

Periodontal Regeneration Using Mineralized Cancellous Bone Graft and Collagen Membrane

Hom-Lay Wang

This presentation discusses the use of a solvent-preserved, mineralized human cancellous bone allograft (i.e, Puros) with or without collagen membrane for periodontal regeneration. The unique properties of this material will be thoroughly considered. Data from recent controlled human clinical trials using this bone graft and collagen membrane for periodontal regeneration (eg, infrabony and furcation defects) will be presented. A step-by-step technique of material use in various clinical situations will be demonstrated. Advantages and limitations of these materials will also be discussed.

Hom-Lay Wang, DDS, MSD, is professor and director of graduate periodontics at the University of Michigan School of Dentistry. He has authored or co-authored 13 book chapters or invited reviews and more than 140 scientific articles and abstracts. Dr Wang is a director of the American Board of Periodontology and president of the Midwest Society of Periodontology. He serves in an editorial capacity for two journals, and on the editorial boards of four other journals. The recipient of numerous awards and honors, his research focuses on the use of absorbable collagen membranes or bone morphogenetic proteins in guided tissue/bone regeneration. Dr Wang has given more than 300 lectures in the United States and throughout the world.
Lecture Abstracts and Curriculum Vitae
(Saturday Sessions)

Prosthetic and Surgical Solutions for Problematic Cases

Moderated by Morton Amsterdam

Morton Amsterdam, DDS, MSc, ScD, is professor emeritus of periodontics and periodontal prostheses and the Norman Vine Professor of Restorative Dentistry at the University of Pennsylvania School of Dental Medicine. He is also clinical professor of surgery at the Medical College of Pennsylvania, Hahnemann University. In addition to maintaining a private practice, Dr Amsterdam has lectured nationally and internationally and is the author of a number of original publications. He is the recipient of numerous awards from national and international organizations for his contributions to dentistry.

Implant Prosthetic Strategies: Tips and Tricks for Problematic Situations

Urs Belser

In recent years, various clinical approaches have emerged for the replacement of extracted teeth with implant-supported restorations. This presentation provides an updated overview and critical appraisal of treatment-planning principles and derived decision-making criteria related to the use of implants for the rehabilitation of the edentulous anterior maxilla, including step-by-step treatment protocols currently used to predictably restore esthetics and function. In particular, the fundamental difference between multiple adjacent implant restorations and extended implant-borne multi-unit fixed denture prostheses (FDPs), comprising both pontics and cantilever elements, will be addressed. In this context, the potential of computer-aided design/computer-assisted manufacture (CAD/CAM) technology as well as problem-solving practical tips and tricks associated with clinical and laboratory procedures will be presented. Finally, depending on the complexity of a given clinical situation, particular design features of extended implant suprastructures, such as integrated tissue-colored epithesis prostheses, will be discussed.

Urs C. Belser, DMD, is professor and head of the Department of Fixed Prosthodontics and Occlusion at the University of Geneva School of Dental Medicine. He is a past president of both the European Association of Prosthodontics and the Swiss Association of Prosthetic Dentistry. Dr Belser is active in the research areas of functional behavior of the muscles of mastication, periodontal prosthetics, dental ceramics, adhesive prosthodontics, and endosseous implants. He is co-author of Bonded Porcelain Restorations in the Anterior Dentition (Quintessence, 2002), and co-editor of the ITI Treatment Guide, Vol. 1 (Quintessence, 2007).

Surgical-Prosthetic Calamity: The Difficult Defect Case

Ole Jensen

Treatment of the problematic alveolar-deficient case can be achieved by nonsurgical prosthetics, various bone-grafting procedures, and/or soft tissue manipulation. The patient’s desires determine what treatment plan and procedure is selected. Oral and maxillofacial surgery treatment has evolved from the use of iliac and tibial bone for reconstruction of jaw bone defects to the use of morphogens, biomimetics, and bone graft substitutes. Surgeons have also developed better ways to manipulate available alveolar bone through the use of osteoperiosteal flaps. The vast majority of alveolar deficiencies can be treated with the use of the so-called alveolar bone flap. The bone flap, sandwich bone graft, alveolar width distraction, and alveolar vertical distraction are examples of surgical applications of the osteoperiosteal flap used to solve difficult surgical-prosthetic problems.

Ole T. Jensen, DDS, MS, is a faculty member of the University of Colorado School of Dentistry and maintains a private practice in Denver focusing on reconstructive surgery of the jaws. He is the editor of The Sinus Bone Graft (Quintessence, 2006) and Alveolar Distraction Osteogenesis (Quintessence, 2002).

Fully Sintered Bio-HIP Y-TZP Zirconia: The Esthetic High-Strength Ceramic Substructure Solution for Crown, Bridge, and Implant Prosthodontics

Howard Kay

Because of the changing nature of dental disease, the focus of advanced restorative dentistry has shifted dramatically over the past 20 years. Advanced periodontal disease is less prevalent today; however, advanced attrition and wear are much greater concerns. Therapy is no longer centered on the retention of periodontally compromised teeth now that successful implant therapy offers a far preferable alternative. Restorative dentistry has concentrated on achieving optimum esthetic results, driving a continuous search for a durable yet wholly ceramic-based restorative solution to replace the ceramometal approach, with its inherent drawbacks of metal margins and opacity. Numerous ceramic-based systems introduced in the last 15 years have limitations related to their potential for crack propagation and catastrophic failure, and consequently their use has been restricted to the anterior portions of the mouth as single units or short-span fixed partial dentures. The sole exception has been the introduction of yttrium-stabilized zirconia (Y-TZP) as a substructure material for fixed single- and multiple-unit restorations. This presentation will discuss the properties, limitations, and differences in the various forms of this material.

Howard B. Kay, DDS, maintains a private prosthodontics practice in West Palm Beach, Florida. He has lectured extensively, nationally and internationally, on topics relating to periodontal prosthetics and osseointegrated implants and their role in the treatment of cases of advanced reconstruction. He is currently engaged in research on the use of a high-strength ceramic substructure for esthetic crown and bridge restorations. Dr Kay is a fellow of the American College of Dentists. He has written several articles for peer-reviewed journals and co-authored the book Periodontal and Prosthetic Management for Advanced Cases (Quintessence, 1988).

Guided Implant Restorations: The Expanded Possibilities

Stephen Parel

While the use of computer-generated surgical guides for implant placement is not new, the extension of this concept to include prosthesis construction as an integral part of treatment has created new and imaginative possibilities for patient care. The availability of this process has also been enhanced by the proliferation of cone-beam computerized tomography scan centers, making the daily application of guided surgery and prosthesis construction a much more practical option. This presentation will address state-of-the-art guided implant dentistry through a review of present experience, both positive and negative. Expanding the application of this approach to a broader base of patients will also be included in a discussion of the potential viability of future guided technologies.

Stephen M. Parel, DDS, is professor and director of the Division of Maxillofacial Prosthetics in the Department of Oral and Maxillofacial Surgery and Pharmacology at the Baylor College of Dentistry, Texas A&M University Health Science Center in Dallas. A diplomate of the American Board of Prosthodontics and the American College of Dentists, he is the cofounder of Osseointegration Seminars, Inc., and a past president of the American Academy of Maxillofacial Prosthetics and the Academy of Osseointegration. He has authored many articles and textbook chapters as well as three books. Dr Parel also serves as a consultant for The International Journal of Periodontics & Restorative Dentistry.
Teeth in Months: A Staged Approach

Steven Lewis

While the original protocol for osseointegrated implants called for a staged approach with loading only after successful bone integration, today there is a trend toward early or even immediate loading. This appeals to patients as they can more quickly enjoy the benefits of their implants. It also has provided interesting and provocative presentations in the dental community. But questions remain unanswered regarding the true benefits, long-term success rates, and design of the definitive prosthesis with immediate restorations. This presentation does not dismiss the advantages of early and immediate loading protocols and encourages continued research and development in this area; however, it raises concerns over the excessive promotion of these protocols after such a short period of time for significant clinical trials. The importance and benefits of the conventional staged approach will be discussed.

Steven Lewis, DMD, maintains a private practice limited to prosthodontics in Cincinnati, Ohio. He is past co-director of the maxillofacial prosthetics residency program at the University of California Los Angeles and the UCLA Implant Center. He is the co-author of two books and several book chapters. Dr. Lewis has written numerous articles and lectured nationally and internationally on the restoration of osseointegrated implants. He also serves on the board of directors of the Academy of Osseointegration.

The Alternative Possibilities to Treat Periodontal Disease

Yoshihiro Ono

Osseointegration has dramatically changed our approach to treating difficult clinical cases. Today, periodontally compromised dentitions are often replaced by dental implants for predictable treatment outcomes. Biologic concepts and techniques of traditional periodontal prostheses have significant impact on the success and longevity of dental implant treatment. This presentation will demonstrate these concepts and techniques through clinical cases and their application to dental implant treatment. New surgical techniques and materials will be introduced to further improve dental implant treatment.

Yoshihiro Ono, DDS, is the founder of the Japan Institute for Advanced Dental Studies in Osaka, where he teaches clinical periodontology and prosthodontics.

Maxillary Anterior Implants—A Window of Opportunity

Moderated by Sergio De Paoli

Sergio De Paoli, MD, DDS, is assistant professor of periodontology at the University of Ancona in Italy, where he also maintains a private practice limited to periodontics. He is a frequent lecturer at international conferences and is co-editor of the Italian edition of The International Journal of Periodontics & Restorative Dentistry.

Implant Placement in Fresh Extraction Sockets

Jan T. Lindhe

The alveolar process develops during tooth eruption, and the tooth with its attachment apparatus—the cementum, periodontal ligament, and bundle bone—establishes a functional unit that is continuous with the surrounding cortical and trabecular bone tissue. Following the removal of a tooth, the tissues of the edentulous site undergo marked quantitative and qualitative changes. The socket, or void, is first filled with coagulum and granulation tissue that subsequently are replaced with woven bone and finally with marrow and few trabeculae of lamellar bone. The dimension of the socket walls decreases, and within a 6- to 12-month interval the volume of the edentulous ridge is markedly diminished. Placement of an implant in a fresh extraction socket was advocated as a means of preventing ridge contraction. This presentation highlights a series of studies in laboratory animals and humans that examined tissue alterations occurring in the alveolar process following tooth extraction and whether implant placement in the fresh socket may interfere with the processes of modeling and remodeling that occur following tooth removal.

Jan T. Lindhe, DDS, PhD, is the former chairman of the Department of Periodontology at Göteborg University, Sweden, and holds a specialist certificate in periodontics. His clinical research has contributed valuable information in diverse subject areas, most recently on the characteristics and behavior of peri-implant tissues. Dr. Lindhe is the author or co-author of nearly 370 publications on the etiology and pathogenesis of periodontal disease, effect of treatment procedures, preventive dentistry, and implant dentistry. He served as co-editor of Tissue Preservation in Caries Treatment (Quintessence, 2001) and Clinical Periodontology and Implant Dentistry (Blackwell, 2003).

Optimal Esthetic Treatment Planning: Extraction, Grafting, and Implant Placement

Myron Nevins

Achieving an optimal esthetic result with implant treatment is dependent upon the maxillomandibular relationship, the eruptive position of teeth in the alveolar process, and previous periodontal disease. The extraction of teeth with prominent roots frequently is accompanied by resorption of the thin buccal plates, yielding a deformed bony housing for implant placement. Since successful osseointegration is coincident with housing of the implant in bone, osteogenic procedures should occur before teeth are extracted. This evidence-based presentation will include procedures for soft and hard tissue analysis that will allow the clinician to determine realistic expectations for treatment outcome.

Myron Nevins, DDS, editor of The International Journal of Periodontics & Restorative Dentistry, is program director of the Department of Continuing Education and associate clinical professor of periodontology at the Harvard School of Dental Medicine. He is director of the Institute for Advanced Dental Studies, former director and chairman of the American Board of Periodontology, and past president of the American Academy of Periodontology. An adjunct professor in the Department of Periodontics at the University of North Carolina, Chapel Hill, Dr. Nevins maintains a private practice limited to periodontics in Swampscott, Massachusetts.

A Clinical Concept for Obtaining Optimal Results When Replacing Maxillary Anterior Teeth with Implants

Christoph Hämmerle

Implant therapy in conjunction with extraction is a demanding procedure. Based on risk assessments and individual treatment strategies for implant timing, soft tissue regeneration and bone regeneration may be necessary. Timing of the implant placement should be based on the morphologic, dimensional, and histologic changes that follow tooth extraction. Immediately after extraction, biologic processes that lead to bone resorption and soft tissue alterations are initiated. In the past decade, the use of guided bone regeneration (GBR) in conjunction with the placement of dental implants has become a clinically well-documented and successful procedure. Defect morphology and the amount of bone regeneration determine the choice of materials. In an attempt to improve the esthetic appearance of artificial crowns, all-ceramic materials have been developed for the restoration of implants and teeth. In addition, ceramic abutments...
The placement of dental implants in extraction sites has steadily increased in the past 15 years. In the 1980s, dental implants were only inserted in healed sites. This approach—often called late implant placement—offered high success rates, but also had significant clinical disadvantages. Most importantly, local bone atrophy was often observed at extraction sites within 6 to 12 months of healing, resulting in contraindications for implant therapy. In addition, the time from extraction to implant restoration lasted often between 12 to 18 months. To eliminate these disadvantages, alternative procedures were developed, such as immediate implant placement on the day of extraction or early implant placement 4 to 8 weeks following extraction and an initial soft tissue healing period. Whereas immediate implant placement has received a lot of attention at implant conferences, early implant placement has been overlooked for many years.

This lecture will present the rationale and clinical procedures for early implant placement in the esthetic zone. Details of extraction technique, socket handling, flap design, correct three-dimensional implant positioning, simultaneous bone augmentation with guided bone regeneration, and a tension-free primary wound closure technique will be demonstrated. In addition, the results of two clinical studies, a retrospective study on 45 patients, and a prospective study on 20 patients will be presented. Both studies clearly demonstrate that this approach offers good clinical outcomes with high predictability and a low risk for esthetic complications. Therefore, this approach can be recommended for daily practice.

See page 25 for bio.
The objectives of this study were to assess the effectiveness of rhBMP-2/absorbable collagen sponge (ACS) to induce bone formation in a pivotal trial comparing autologous bone grafts to rhBMP-2 at a dose of 1.50mg/ml.

The presentation will review emerging therapies in the areas of materials science, growth factor biology, and cell/gene therapy for clinical application. In addition, the presentation will highlight the use of polymeric delivery systems and image-based scaffolding technologies that aid in the targeting of proteins, genes, and cells to oral and periodontal lesions for reconstruction of periodontal and peri-implant defects.

William Giannobile, DDS, MS, DMedSc, is the Najjar Endowed Professor of Dentistry and Biomedical Engineering and the Director of the Center for Oral Health Research at the University of Michigan School of Dentistry. He received his DDS and an MS in oral biology from the University of Missouri. He later received a certificate in periodontology and a DMedSc degree in oral biology from Harvard University.

New Approaches for Periodontal Regenerative Medicine

William Giannobile

Repair of periodontal soft and hard tissue defects caused by periodontal disease or trauma is a major goal of reconstructive therapy. The field of regenerative medicine combines advances in materials science and the life sciences to repair tissues and organs. Periodontal tissue engineering has achieved with limited success by the use of a variety of biomaterials such as osteoconductive scaffolds, barrier membranes, and block grafting techniques. Over the past decade investigators have begun to use signaling molecules such as growth factors, including platelet-derived human growth factor and bone morphogenetic proteins, and biomimetic peptides to restore lost tooth support due to damage to the alveolar process. This presentation will review emerging therapies in the areas of materials science, growth factor biology, and cell/gene therapy for clinical application. In addition, the presentation will highlight the use of polymeric delivery systems and image-based scaffolding technologies that aid in the targeting of proteins, genes, and cells to oral and periodontal lesions for reconstruction of periodontal and peri-implant defects.

Altering Alveolar Bone: The Orthodontic Possibilities

Vincent Kokich

The surgeon, periodontist, and restorative dentist depend upon the alveolar bone to support teeth and implants in a stable, healthy, and hygienic environment. However, lack of alveolar bone support is perhaps the most common and challenging dilemma confronting the clinical team. Although bone-grafting techniques have been developed to overcome the lack of alveolar support, these techniques add time, expense, and some degree of unpredictability to the final restorative result. Orthodontics can positively influence the breadth and depth of the alveolar bone around both teeth and implants in specific situations. However, the influence of orthodontic alveolar remodeling also may be somewhat unpredictable in some cases. This presentation will use many clinical examples to define what, when, and how adjunctive orthodontics can help to overcome challenging alveolar bone defects in the periodontic-restorative patient.

Vincent Kokich, DDS, MSD, is a professor in the Department of Orthodontics at the University of Washington, Seattle; he also maintains a private orthodontics practice in Tacoma, Washington. He has published numerous book chapters and articles and has delivered more than 600 presentations throughout the world. He serves as case reports editor for the American Journal of Orthodontics and Dentofacial Orthopedics, as associate editor for The Angle Orthodontist and Practical Reviews in Orthodontics, as an advisory board member for the Journal of Esthetic Dentistry, and on the editorial boards of several journals. Dr Kokich is the past president of the American Academy of Esthetic Dentistry and the American Board of Orthodontics.

Orthodontic Application to Resolve Periodontal and Implant Treatment Obstacles

Roger Wise

The orthodontist is a key member of the multidisciplinary team in resolving periodontal and implant treatment planning obstacles. All dental disciplines, including orthodontics, must be considered for optimal implant placement. The inherent periodontal risks of bone loss and recession during or subsequent to orthodontics should always be a consideration in treatment planning. An understanding of the timing of accompanying sophisticated periodontal regenerative and gingival augmentation techniques is paramount to achieving predictable long-term success. The resultant enhanced func-
Surgical Techniques of Periodontally Accelerated Osteogenic Orthodontics

Kevin Murphy

This presentation will demonstrate the clinical periodontal procedures of periodontally accelerated osteogenic orthodontics (PAOO). While PAOO facilitates decreased orthodontic treatment time, the increase in the alveolar ridge width as a result of this therapy will be emphasized. Modifications of the surgical protocol, which enhance the predictability of the surgical outcomes, will be discussed. Patients frequently present with the need for both orthodontic and gingival augmentation procedures. The combination of gingival augmentation and PAOO procedures will also be demonstrated.

Kevin G. Murphy, DDS, MS, maintains a private practice in Baltimore, Maryland, limited to orthodontics, periodontics, and implant dentistry. He has published numerous articles and textbook chapters on periodontal regeneration and implant dentistry and has lectured nationally and internationally on corticotomy-facilitated orthodontia, periodontal regeneration, placement and restoration of dental implants, and periodontal prostheses. Dr Murphy is a diplomate and member of the American Academy of Periodontology, the Academy of Osseointegration, and the American College of Prosthodontics. He is also an associate attending in the Department of Otolaryngology and Dentistry at the Greater Baltimore Medical Center and a guest faculty member of the Pankey Institute.

The Use of Miniscrews for Orthodontic Anchorage

Robert Vanarsdall

Temporary miniscrews provide a biomechanical advantage that enables more effective and efficient orthodontic treatment of complicated problems. This presentation will familiarize the attendee with the use of this new technology for orthodontic anchorage. Attendees will learn the terminology and classifications for intraoral anchorage devices, understand the rationale for using miniscrews for different patient types, and be aware of the design of approved systems used for temporary anchorage. In addition, site selections and placement of orthodontic implants along with indications and contraindications will be reviewed.

Robert L. Vanarsdall, Jr, DDS, is professor and chairperson of the Department of Orthodontics at the University of Pennsylvania School of Dental Medicine. In addition to his teaching commitments, he maintains a private practice. He has lectured extensively, nationally and internationally, and has presented special lectures for the American Association of Orthodontists. He served as editor-in-chief of an orthodontics journal for 17 years in addition to other editorial board commitments. Dr Vanarsdall also co-authored three editions of Orthodontics: Current Principles and Techniques (Mosby), and is co-author of the book Applications of Orthodontic Mini Implants (Quintessence, 2007). Dr Vanarsdall is a fellow of the American College of Dentists, International College of Dentists, the Philadelphia College of Physicians, and the National Academies of Practice.

Ceramics—The Creation of Perfection

Moderated by Lloyd Miller

Lloyd L. Miller, DMD, is a clinical professor of graduate and postgraduate prosthodontics at Tufts University and maintains a private practice in restorative dentistry in Weston, Massachusetts. He is the owner and president of Gnathos Dental Laboratory, a private laboratory and research facility. Dr Miller is a fellow of the American College of Dentists and a past president of the American Academy of Crown and Bridge Prosthodontics, the IR Hardy Conference, and the American Academy of Esthetic Dentistry.

The Effect of Dentin or Foundation Cores on Long-Term Prosthodontic Survival

Kenneth Malament

The patient’s satisfaction with esthetics is an important clinical objective. Knowledge within dental technology, dental science, and dental practice has dramatically expanded, leading to better quality, artistry, and more standards-based clinical applications. Ceramics are the most consistently predictable esthetic dental material. All-ceramic materials were developed to improve ceramic color and marginal fit. Despite substantial improvements in ceramic material strength and toughness, all-ceramic crowns may fail, particularly on molars. Ultimately, crown performance is a complex set of interactions between crown material and geometry, the characteristics of the support structure of the cement and crown, and the clinical loading history. This presentation will provide a comprehensive look at failure modes and effects in bilayer all-ceramic crown-cement-tooth systems, tying together the influences on resistance to fracture initiation and propagation of ceramic material properties and thickness; crown and tooth geometry; cement modulus and layer thickness; damage induced by shaping, fabrication, clinical adjustments, and sandblasting; and fatigue in the wet intraoral environment. Some counter-intuitive findings will be addressed, including changes in fracture behavior with different geometry and the influence of the compliant cement layer beneath stiff cores. Physical factors that may impact long-term restoration survival as well as original research demonstrating the effect of different core materials on the survival of various all-ceramic materials also will be discussed.

Kenneth A. Malament, DDS, MScD, is an examining director and a diplomate of the American Board of Prosthodontics and maintains a full-time practice in Boston that includes a dental laboratory with master dental technicians. He is also a clinical professor in postgraduate prosthodontics at Tufts University. Dr Malament is secretary of the American College of Prosthodontics and president-elect of the Greater New York Academy of Prosthodontics. He has also served as president of the Northeastern Gnathological Society and the Northeastern Prosthodontic Society and as secretary-treasurer of the International College of Prosthodontics. Dr Malament has been a consultant to three journals and has published in the dental literature in the areas of all-ceramic survival statistics, fixed and implant prosthodontics, risk analysis, occlusion, material science, and periodontics.

Restorative Dentistry: Think Different, Think Biomimetics

Pascal Magne

Traditional prosthodontic principles of stabilization and retention do not align with the biology (pulp survival), function, and mechanics of natural teeth. A biomimetic approach is proposed instead, in which all of the prepared dental tissues return to full function through a hard tissue bond. Functional stresses pass through the tooth, drawing the entire crown into the final functional, biologic, and esthetic result. This is in sharp contrast to the porcelain-fused-to-metal or porcelain-fused-to-ceramic technique in which the
Achieving Esthetic Excellence
Mauro Fradeani

Design of anterior restorations with optimum esthetics requires correct treatment planning, evaluation of a suitable ceramic material, and skillful application and techniques. The use of metal-free ceramic materials allows excellent esthetic results for veneers, crowns, and fixed partial dentures. Material selection with the dental ceramist is fundamental in the management of complex rehabilitation cases. Several clinical follow-ups of glass, ceramic, and alumina and zirconia systems indicate the adequacy of these materials for anterior and posterior restorations. Clinical and technical suggestions for obtaining esthetic and durable results will be discussed.

Mauro Fradeani, DMD, is president of the European Academy of Esthetic Dentistry and past president of the Italian Academy of Prosthetic Dentistry. He is an active member of the American Academy of Esthetic Dentistry and a member of the International College of Prosthodontists and the American Academy of Fixed Prosthodontics. Dr Fradeani has taught extensively in Italy and abroad on periodontal prostheses and esthetic dentistry and is an adjunct associate professor at Louisiana State University School of Dentistry’s Department of Prosthodontics. He maintains a private practice limited to prosthodontics and esthetic dentistry in Pesaro and Milan, Italy.

Success by Design: Comparing Enamel, Dentin, Metal, and Zirconia-Supported Reconstructions
Konrad Meyenberg

Since the introduction of the porcelain-fused-to-metal (PFM) technique, the design of the classic framework has evolved from an over-engineered and purely functional design into a sophisticated, elegant, and purposeful support both for esthetics and function. The PFM technique has become the gold standard for long-lasting esthetic restorations. The development of highly esthetic and durable ceramic veneering materials extended their use into new fields. Predictable bonding techniques have been developed for a wide range of substrates, allowing fusion of esthetic but weak materials to stronger but not necessarily esthetic core materials. These include a variety of different framework materials, including zirconia, enamel, and dentin. This presentation will discuss similarities and differences between these materials. Of special interest is the quality of the bond between core and veneering material, including advantages and limitations of each. Clinically relevant factors for the proper indication of these procedures are shown through numerous clinical cases with tooth- and implant-supported restorations.

Konrad H. Meyenberg, Dr Med Dent, maintains a private practice limited to esthetic dentistry and implantology in Zurich, Switzerland. He is a senior lecturer in the Department of Crown and Bridge Prosthodontics at the University of Zurich and at the University of Basel in Switzerland. He is a speaker at numerous international congresses and publishes in the fields of esthetic dentistry, peri-prosthetics, and implant prosthodontics. Dr Meyenberg is an active member of the European Academy of Esthetic Dentistry, the Academy of Osseointegration, and the Swiss Society of Reconstructive Dentistry.

Treatment Options and Limitations in Fixed and Implant Prosthodontics: Expecting the Unexpected
Avishai Sadan

Facing clinical failures is the most difficult aspect of practicing prosthodontics, especially in fixed and implant prosthodontics because of the irreversible nature of the procedures involved. The presentation will discuss common methods for treatment planning and management of comprehensive and esthetically challenging situations and will provide some guidelines to diagnose, identify, and manage clinical failures. Emphasis will be placed on the advantages and limitations of some of the available diagnostic tools in properly identifying clinical situations prone to failures.

Avishai Sadan, DMD, is professor and chairman of the Department of Comprehensive Care, Case Western Reserve University School of Dental Medicine, Cleveland, Ohio. He serves as editor-in-chief of Quintessence International and Quintessence of Dental Technology (QDT) and on the editorial boards of other journals, and he lectures and publishes nationally and internationally on esthetic and implant dentistry and on biomaterials. A member of the American College of Prosthodontists, the Academy of Osseointegration, the European Academy of Esthetic Dentistry, the American College of Dentists, and other organizations, Dr Sadan also maintains an intramural practice limited to fixed and implant prosthodontics.

Predictable and Precise Tooth Preparation for Anterior Bonded-Porcelain Restorations in Complicated Cases
Galip Gürel

Creating precision preparation, fit, and anesthetic final outcome requires significant treatment planning for each patient. Designing a new smile consists of many important steps to produce predictable, successful results. The key to esthetic excellence is communication with the patient and the laboratory from beginning to end. Very precise and predictable tooth preparation, waxup, silicone indices, and related techniques such as APR (esthetic pre-recontouring), APTs (esthetic pre-evaluative temporaries), and preparation through the APTs are extremely crucial. This eliminates mistakes and depth-cutter destruction that could result if the tooth is prepared without taking into account the aging affects on the enamel or inappropriate positioning on the dental arch.

Galip Gürel, DDS, maintains a private practice specializing in esthetic dentistry in Istanbul, Turkey. A pioneer in his field, he lectures extensively around the world. He is the founder and current president of the Turkish Academy of Aesthetic Dentistry and is a diplomate of the American Board of Aesthetic Dentistry. Dr Gürel serves as editor-in-chief of the Turkish edition of Quintessence International, and is on the editorial board of several other journals. He is the author of The Science and Art of Porcelain Laminate Veneers (Quintessence, 2003).
Recent Advances in Sinus Elevation Surgery

Moderated by Mariano Sanz

Mariano A. Sanz, MD, DDS, Dr Med, is professor of periodontology, director of the periodontology graduate program, and dean of the Faculty of Odontology of Universidad Complutense de Madrid. He holds specialist certificates in stomatology and periodontology. Dr Sanz is past president of the Spanish Society of Periodontology, associate editor of two journals, and member of the editorial board of several others. He has published more than 150 articles and book chapters on periodontology, implant dentistry, and dental education.

State of the Art 2007: What We Do and Don’t Know About Sinus Elevation Surgery

Stephen Wallace

Various surgical techniques for sinus elevation surgery exist today, and all are associated with very high levels of success when used with proper indications. Three evidence-based reviews published in the last 4 years on the lateral window technique are in agreement with respect to the most important clinical decisions that we make in sinus grafting. A biologic surgical approach is necessary that will further aid in the accomplishment of the all-important goal of formation of vital bone. This presentation will describe these evidence-based decisions, along with a biologic rationale for their clinical success. Possibilities for enhancement offered by newer graft materials and growth factor applications will be addressed. The relationship of sinus membrane perforations to successful therapy, a surgical technique that avoids perforations, and clinical techniques to repair large perforations should they occur will also be discussed.

Stephen Wallace, DDS, is an associate professor in the Department of Implant Dentistry at New York University and maintains a private practice for periodontology, bone regeneration, and implant dentistry in Waterbury, Connecticut. He holds a specialist certificate in periodontics. He lectures nationally and internationally on implant dentistry and periodontics. Dr Wallace is the author of an evidence-based review of the sinus augmentation procedure published in the Annals of Periodontology as well over 25 journal articles and textbook chapters. He is co-editor of a textbook on sinus elevation surgery that was recently published in Italy.

A Clinical Rationale for Various Sinus Bone Graft Materials and Techniques

Craig Misch

Since the development of the sinus graft procedure in the mid-1970s, clinicians have been evaluating alternatives to autologous bone. Over the years numerous bone substitutes, including allografts, alloplasts, and xenografts, have been used or combined with autologous bone for sinus grafting. The 1996 Sinus Graft Consensus evaluated retrospective data on various graft materials and concluded that they all seemed to perform well. However, the data analysis did not factor the amount of residual bone below the sinus. Bone substitutes were recommended for the posterior maxilla with less resorption or sinus pneumatization. Prospective clinical trials have been recommended to evaluate bone substitutes in cases with minimal residual bone height. This presentation will explore the many benefits, as well as the drawbacks, of the various sinus bone grafting materials and techniques. Factors such as healing time requirements, outcomes of immediate loading of implants, patient acceptance, economic incentives, and postoperative morbidity associated with different donor sites will be discussed.

Craig M. Misch, DDS, MDS, is a clinical associate professor in the Department of Implant Dentistry at New York University and a clinical assistant professor in the Department of Surgical Services at the University of Pittsburgh. He also maintains a private practice in Sarasota, Florida. He holds specialty certificates in prosthodontics and oral implantology and completed specialty training in oral and maxillofacial surgery. He has written and lectured extensively on the topics of reconstructive surgery, bone grafting, implant surgery, and prosthodontics and has been a featured speaker at the annual meetings of the Academy of Osseointegration and the American Association of Oral and Maxillofacial Surgeons. Dr Misch is a diplomate of the American Board of Oral and Maxillofacial Surgery and a member of the editorial boards of two journals.

Innovative Measures for Improving Efficiency and Simplifying Surgery

George Watzek

A review of the literature shows a recommended thickness of 5 to 6 mm for the bone wall separating the maxillary sinus and oral cavity as the virtually exclusive indication for the performance of a pericrestal sinus lift. The criterion for success is the implant survival rate supported by radiologic follow-up. The currently recommended surgical techniques include elevation of a portion of the maxillary sinus floor together with the surrounding mucosa using either an osteotome or balloon. There are no studies on the adequate anatomic bone situations or on parameters potentially affecting the success of the procedure or on the mechanical characteristics of the mucosa to be elevated. Virtually any material suitable for application via the pericrestal access is recommended without assessing whether the material will allow for even filling of the elevated secondary defect. Unresolved questions have prevented more extensive use of the pericrestal sinus lift. In contrast to conventional sinus elevation from the buccal aspect, its advantages are obvious, including the minimally invasive nature of the procedure, the preserved integrity of the local bony environment, and the increased osseous regenerative capacity. Techniques, studies, and considerations for optimal use of the pericrestal sinus lift procedure will be presented, including site and timing of the procedure, consideration of the anatomic environment, and adjustment of the surgical approaches with due consideration of the findings obtained. Moreover, the mechanical requirements and application for augmentation materials will be analyzed, and modifications of commonly used materials will be presented. Overall, new approaches for a simplified but reliable use of pericrestal sinus elevation will be provided.

Georg Watzek, MD, DDS, PhD, is head of the Dental School at the University of Vienna. He is president of the Austrian Society of Oral Surgery and Implantology and a former president of the European Association for Osseointegration. Dr Watzek is the author of more than 200 publications, including 7 textbooks. His most recent book, Implants in Qualitatively Compromised Bone, was published earlier this year by Quintessence.

Sinus Lift Procedures with Piezosurgery

Tomaso Vercellotti

Sinus lift surgery is a highly predictable technique for implant rehabilitation of the atrophic posterior maxilla. The use of the piezosurgery device in this technique, because of its highly selective cutting action, eliminates the risk of perforation of the Schneiderian membrane during the osteotomy with a vestibular approach. The most effective surgical technique for bony window opening in the presence of both thin and thick sinus walls will be presented, in addition to the fundamental aspects that must be considered in order to avoid any lesion to the sinus membrane during the sinus augmentation procedure. Moreover, a clinical rationale to assess the best graft material for single-phase and multi-phase surgeries and a preview of the new technique for implant site preparation with piezosurgery will be presented.
Hydraulic Sinus Condensing

Leon Chen

Hydraulic sinus condensing (HSC) is today’s premiere technique for sinus augmentation. Less invasive than prior sinus augmentation techniques, HSC uses water and air pressure to prevent membrane perforation, with condensers to gently build up the sinus floor. This presentation will demonstrate how to perform HSC in any situation, including cases with a severely atrophic maxilla, a septum presence, and a steeply sloping sinus floor. In addition, HSC with immediate implant placement and platform switching for initial stabilization will be discussed.

Surgical Innovations in Implant Dentistry

Hideaki Katsuyama

In the field of implant dentistry, the posterior maxilla poses a risk of compromised treatment because of its specific anatomic characteristics. Careful analysis and treatment planning are essential to attaining optimal treatment results in this region. Ridge augmentation, including sinus grafting, may be necessary to facilitate ideal implant placements. This presentation will address the classification and concept of treatment planning based on modern cone-beam computerized tomography and a microsurgical procedure combined with conventional sinus augmentation methods. Important steps and findings of this procedure will be shown via video of an actual surgery. The handling of complications, such as membrane perforations, and the results will also be discussed. In order to improve stability in compromised situations such as implant placement in augmented sites, a loading protocol with new surface technology (SLActive) was used. Short-term results of the early loading protocol for compromised implant sites will be reported.

Rational and Predictable Periodontal Plastic Surgery

Moderated by James J. Hanratty

James J. Hanratty, DDS, maintains a private practice in periodontics and implants in Swampscott, Massachusetts, and has served as a visiting lecturer at Tufts University Dental School and Harvard Dental School since 2001. A diplomate of the American Academy of Periodontology, he frequently lectures on periodontics and implants throughout the United States and Europe.

Tissue-Engineered Solutions for Soft Tissue Defects

Michael McGuire

Periodontal plastic surgery is one of the most rewarding and rapidly growing segments in our profession. This clinically oriented presentation features lecture and video surgery that blends diagnostic guidelines, patient management skills, and step-by-step techniques to provide a well-rounded understanding of contemporary periodontal plastic surgery and its place in current practice.

Papilla Regeneration—Is It Possible?

Preston D. Miller

Papilla regeneration has been one of the most elusive goals of periodontal therapy. This presentation will discuss two modalities for treatment. The first is periodontal plastic surgery followed by a second procedure, nonsurgical bone grafting, to assure elimination of a residual pocket. The second modality involves orthodontic movement. The importance of the interdental space dimensions, anatomic form of adjacent teeth, and location of contact points will be highlighted.

Use of Acellular Dermal Matrix for Soft Tissue Grafting in the Esthetic Zone

Edward Pat Allen

Acellular dermal matrix has been available for intraoral grafting procedures for more than 10 years. Randomized, controlled clinical trials have demonstrated that results equivalent to palatal connective tissue can be achieved with acellular dermal matrix in root coverage procedures. Use of acellular dermal matrix for treatment of soft tissue defects around teeth and implants will be shown in case presentations. Human histology and evidence from clinical trials will also be presented.

Recapturing Esthetic Gingival Margins and Papilla Height

Giano Ricci

Recapturing esthetic gingival margins and adequate papilla height according to ideal soft tissue morphology are major issues both in periodontal and implant cases. The clinician may confront these challenges regularly, especially in very advanced cases. A variety of surgical, nonsurgical, and combination techniques will be discussed.

Leon Chen, DDS, MS, is founder of the Dental Implant Institute in Las Vegas, Nevada, and an inventor of several implant and surgical instruments associated with the surgical procedure he developed for vertical and horizontal ridge augmentation. He is also a visiting clinical instructor for the Implant Department of the Harvard University School of Dental Medicine. Dr. Chen serves on the editorial board of the International Journal of Oral Implantology and recently received the Rear Admiral Kevin F. Delaney “Keeping America Strong” award. He lectures both nationally and internationally.
techniques have been proposed to solve these problems. This presentation will analyze long-term results of different treatment modalities, indicating the advantages and limitations of different approaches on natural teeth, dental implants, and edentulous areas. The need for an adequate diagnosis, a comprehensive treatment plan, a full understanding of wound-healing mechanisms, and proper technical execution will be emphasized.

Giano Ricci, MD, DDS, MScD, maintains a private practice in periodontics and implant dentistry in Italy. He holds a specialist certificate in stomatology. He is the founder of Isinago, a private teaching institute, president of the Florence Perio Group, and a founder and past president of the Italian Society of Periodontology. Dr. Ricci has lectured extensively in Europe, Japan, and the United States, published over 40 papers in the field of periodontics, and co-authored or contributed to several books on periodontics, esthetics, and osseointegration. His clinical practice and clinical research is focused on the long-term results of severe periodontal cases in which osseous surgery and regeneration of the attachment apparatus are performed.

Soft Tissue Grafting: Problems, Complications, and Solutions

Gary Reiser

Predictably successful periodontal plastic surgical procedures are among the most valuable and yet underutilized of dentistry’s clinical modalities. Carefully diagnosed and executed procedures provide healthy, functional, and esthetic results that contribute remarkably to treatment outcomes. However, surgical outcomes vary and depend upon many factors, including case selection and operator experience and skill. Problems and complications that may be encountered during surgery, such as flap management, suturing problems, healing complications, and failure to provide ideal root coverage, will be discussed and solutions suggested.

Gary M. Reiser, DDS, is associate clinical professor of periodontology at Tufts University and director and vice chairman of the American Board of Periodontology. Dr. Reiser also maintains a private practice in Swampscott, Massachusetts.

Reconstruction of Lost Papillae Around Teeth and Dental Implants

Yasukazu Miyamoto

The papilla is visible in about 80% of patients and, therefore, is an essential component to esthetic appearance. Surgical, prosthetic, and orthodontic approaches will be considered for reconstruction of lost papillae. Treatment strategies for papillae between two teeth, tooth and pontic, pontic and pontic, tooth and implant, implant and implant, and implant and pontic will be discussed. However, this presentation will be focused primarily on surgical techniques for reconstructing papillae around teeth and dental implants.

Yasukazu Miyamoto, DDS, is an instructor of periodontology at the Japan Institute for Advanced Dental Studies and the director of the Shijo-Karasuma Perio Implant Center. Dr. Miyamoto lectures on topics in periodontology, osseointegration, and implant esthetics and is a visiting lecturer at Tokyo Medical and Dental School as well as Asahi University. He is the president of the Osseointegration Study Club of Japan and vice-president of the Japanese Academy of Clinical Periodontology.
Abstracts of posters will be published in the fall issue of The International Journal of Periodontics & Restorative Dentistry

Poster Presentations

No. 1 W. Kim, A. Koa, S. Villareal, S. Cho, S. Froum, N. Elian, D. Tarnow
New York, New York
Clinical Advantages of Fixed Provisionalization in Atrophic Ridges Utilizing Transitional Implants

No. 2 E. Grageda
Mexico City, Mexico
Zirconia Implant–Supported Fixed Maxillary Complete Denture: A Novel Design Using the Zircon-Zahn Protocol

No. 3 S. Stübinger, B. von Rechenberg, J. Kutenberger, P. Hering, H. Zeilhofer, R. Sader
Frankfurt, Germany and Basel, Switzerland
Bone Healing Following Osteotomy: A Comparison of CO₂ Laser, ER:YAG Laser, Ultrasound, and Saw Techniques

No. 4 R. Yukna
Aurora, Colorado
Outstanding Clinical and Human Histologic Outcomes with the PerioLase Nd:YAG Laser

No. 5 M. Restrepo
Bogotá, Columbia
Tissue Augmentation Utilizing Autologous Growth Factors and Fibrin Matrices in Combination with Particulate Bone Allograft for Dental Implant Placement: Clinical and Histological Evidence

No. 6 C. Coutinho Alves
Porto, Portugal
Full-Arch Immediate Implant Placement for Optimal Immediate Function in Periodontally Comprised Patients

No. 7 G. Preti, G. Manzella, R. Navone, C. Russo, R. Canuto G. Schierraro
Turin, Italy
Biologic Factors Involved in the Osseointegration of Oral Titanium Implants Positioned Using Piezosurgery Versus a Drill Technique: A Pilot Study in Minipigs

No. 8 M. Nagata, L. Melo, M. Messora, S. Bomfil, S. Fucini, V. Garcia, A. Bosco
Araçatuba, Brazil
Effects of Platelet-Rich Plasma on Bone Healing with Autogenous Bone Grafts in Critical-Size Defects: A Histologic and Histometric Study in Rabbit Calvaria

No. 9 J. Park, S. Kang, O. Joeng, J. Lee, S. Yoo, I. Kim, J. Suh
Daegu, Korea
Anorganic Bone Mineral Coated with Tetra-Cell Adhesion Molecule Enhances Differentiation of Osteoblast-like Cells and Bone Formation

No. 10 Y. Hsieh, A. Tsai, C. Liu
Taiwan
Histologic and Histomorphometric Evaluation of Human Maxillary Sinus Floor Augmentation Using Different Bone-Grafting Materials

No. 11 V. Chronopoulos, S. Kourtis
Athens, Greece
Tooth-and-Tissue-Supported Transitional Fixed Partial Dentures

No. 12 N. Matsumoto, S. Yosida
Tokyo, Japan
Immediate Implant Loading with Simultaneous Guided Bone Regeneration: 76 Case Reports

No. 13 E. Park, E. Kim, D. Mooney
Daejeon, Korea and Cambridge, Massachusetts
New Bone Formation Improved by Aniogenic Factor in Enriched Platelet-Rich Plasma

No. 14 M. Gatti, T. Suda, S. Hate, M. Papageorge, R. Chapman
Boston, Massachusetts
Immediate Loading of Zygomatic Implants in the Severely Atrophic Maxilla

No. 15 Y. Tsai, Y. Hsieh, C. Wang, J. Chen
Taipei, Taiwan
Esthetic Surgical Crown Lengthening and Gingival Depigmentation: A Case Report

No. 16 S. Nakagawa
Kanagawa, Japan
Super Corticotomy Orthodontics: Case Report of Minimal Intervention with a Cone Beam CT and a Microscope in the Augmentation of Labial Alveolar Bone Without the Addition of Bone Material

No. 17 G. Durstberger, E. Jiru, C. Ulm
Vienna, Austria
A Multistage Procedure to Replace a Maxillary Central Incisor with an Implant-Supported Single Tooth Restoration: A Case Report

No. 18 F. Alshehri, S. Al-Jetaily, A. Al-Farraj
Riyadh, Saudi Arabia
Assessment of Osstell and Periotest Systems in Measuring Dental Implant Stability

No. 19 T. Traini, R. Celletti, M. Piattelli, G. Orsini, A. Scarano, S. Caputi
Chieti, Italy
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No. 20 A. Ferrara, S. Lunetti, E. Manfredi, C. Galli, M. Bonanini, G. Macaluso
Milan, Italy and Parma, Italy
Tooth Extraction, Site Augmentation, and Implant-Supported Restoration in a Single Procedure

No. 21 D. Kim
Cambridge, Massachusetts
Gene Expression Profile in Refractory Periodontitis Patients

No. 22 H. Rios, G. Avila, W. Giannobile
Ann Arbor, Michigan
The Importance of Periostin in the Function of the Periodontal Ligament

Granada, Spain and Ann Arbor, Michigan
Comparative Study Using Two Different Compos- ite Bone Graft Mixtures for Sinus Augmentation

No. 24 F. Fontana
Milan, Italy
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No. 25 M. Pavão, R. Cruz, P. Paul
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No. 26 M. Bibeau
Prescott, Arizona
Implant Placed in Fresh Extraction Sites Presenting Radiographic Evidence of Endodontic and Periodontal Lesions: A 5-Year Prospective Clinical Study

No. 27 D. Haam, G. Favero, W. Chang, S. Cho, S. Froum, N. Elian, D. Tarnow
New York, New York
Improvement of Facial Profile After Ridge Augmentation of Anterior Maxilla

No. 28 O. Ortiz, C. Hery, D. Holmes, S. Cho, S. Froum, N. Elian, D. Tarnow
New York, New York
Soft Tissue Dimensions in Resorbed Maxillary Alveolar Ridges Assessed by CAT-Scan Images

No. 29 I. Rocchietta, D. Kim, J. Fiorellini, M. Simion
Milan, Italy
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No. 31 R.S. Nishioka, A.N. Kojima, F.A. Souza
São José dos Campos, Brazil
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Paradigm Changes in Clinical Regeneration

Program Chair
Myron Nevins

TOPICS
• Biologic Investigation of New Regenerative Products
• Bone Augmentation to Place Dental Implants
• Advances in Periodontal Regeneration
• Tissue Engineering—The Future Is Now
• The Influence of Bone Volume on Implant Sites

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