Speakers Abstracts (A–Z)

1

Alcoforado, Gil* and Leitao, Pedro
Portugal

Orthodontic tooth movements in periodontal and implant therapy

As Dentistry develops and makes use of more and better-sophisticated techniques, the inter-relationship between different sub-specialties becomes even more necessary. The presentation will focus on different areas of Orthodontics and Periodontology that work together in order to achieve treatments that are more stable, more durable and much more aesthetically pleasing. Among other subjects, the rationale of frenectomies and fibrotomies, the use of orthodontics on teeth with reduced periodontium and the promotion of gingival aesthetics will be discussed. With the biological principles of osseointegration well established, several utilizations of endo-osseous dental implants as part of Ortho-Perio treatments will be presented.

2

Aparicio, Carlos
Spain

The posterior atrophic maxillae: techniques for avoiding augmentation procedures

This lecture will introduce the use of different techniques adequate in biomechanically compromised situations frequents in oral implantology: namely the extremely reabsorbed maxilla. The maximum utilization of residual bone volume, the use of a surgical protocol for implant placement similar to the classic one, the absence of any alveolar reconstruction previous or combined with the implant placement and a reassuring independence of the complications inherent to techniques that require multiple interventions and donor sites, is the basic rationale for the implementation of these procedures.

3

Artzi, Zvi
Israel

Sinus grafting: indications and limitations

There are several options to restore the posterior maxillary region to accommodate osseointegrated implants, such as applying surgically augmentation techniques, anchoring implants to the zygomatic arch or to the pterygoid plates, or simply using short implants. Autogeneic screw-retained blocks, guided tissue regeneration principles with titanium-reinforced membranes, or applying the distraction osteogenesis technique can be used to regenerate the posterior atrophic maxilla in a vertical direction. However, these techniques are not as successful and as predictable compared to the sinus grafting procedures. Furthermore, sinus grafting is virtually the only applicable solution to place implants in this particular region when the residual osseous volume is less than 3 mm in depth. Augmentation of the sub-antral floor can be approached through the prepared implant site, i.e. 'the internal sinus elevation' or through 'the lateral fractured window/trap door technique'. Both are safe and proved to establish osseous housing for functional implants comparable to those placed in pristine bone. This presentation will focus on possible hazardous situations and their resolutions.

4

Asikainen, Sirkka
Sweden

Releasable minuscule mines from periodontal bacteria, a health threat?

In patients with inflamed periodontitis, bacteria growing in subgingival area can gain access to blood circulation as evidenced by non-oral infections caused by periodontitis-associated bacteria. However, bacteria can also spread detrimental material without translocating from their natural habitat in the subgingival plaque biofilm. For instance, Gram-negative bacteria, which predominate the cultivable microbiota in periodontitis, release their surface components to extracellular space through different pathways, such as by forming outer membrane vesicles and, as recently suggested, in the form of soluble complexes. Bacterial components released in soluble form may not only act at the anatomical site of infection, where these bacteria reside, but also spread throughout the infected host crossing anatomical barriers impermeable to whole bacterial cells. By this means soluble bacterial components convey a potent addition to bacterial pathogenicity. Early evidence suggests that in patients with chronic periodontitis bacterial components circulate in blood vessels in biologically significant levels to contribute to patient's general inflammatory status and to enhance proinflammatory and proatherogenic episodes in the arterial walls. Routine periodontal treatment procedures efficiently decreased the inflammatory status of the patients. Promoting periodontal diagnostics and early phase treatment would suppress the oral source of circulating immune stimulants of bacterial origin to the level compatible with periodontal health.

5

Attstrom, Rolf
Sweden

E-learning in continuing and graduate periodontal education – a critical analysis

E-learning or computer assisted learning (CAL) has become the focus of the educational system worldwide. Politicians, educators, and the business world have embraced with enthusiasm the new options to provide learning and competence development via the Internet and the use of computers. Content learning systems (CLS), Learning management system (LMS), simple communication software, online scientific journals, collaborative learning, with resource persons and colleagues have created excellent options for learning and quality development in clinical dentistry. The requirements on equipment and the user's competence in the handling of the computer and the software have been shown to influence the outcome of e-learning. Systematic reviews of research on the efficacy and usability of e-learning in higher education have demonstrated contradictory results. In the 1990's the research reported optimistic results, while recent research has documented a more cautious positive attitude to e-learning. Furthermore the initial believe that the user could learn by computer assisted

learning independent from interactions and contacts with resource persons has been contradicted by research evidence. Despite the overwhelming believe in computer mediated learning disappointing experiences have been made of the efficacy of e-learning. The presentation will report current experiences and research regarding the effect of e-learning for learning and competence development in periodontal continuing and specialist education.

6

Baehni, Pierre
Switzerland

Long-term management of periodontal patients – what steers maintenance

The management of the periodontal patient is similar to that of the diabetic patient as both, peridodontitis and diabetes, are chronic, slowly progressing diseases. In chronic conditions, patient follow-up and maintenance care are of the utmost importance for long-term prognosis. Periodontal maintenance aims at optimizing the results of therapy during the healing phase, preventing progression of the disease, and prolonging life of an acceptable dentition by maintaining periodontal health. The management of the periodontal patient is influenced by a variety of different factors. These include biological factors associated with oral and systemic conditions; they also include attributes related to the patient profile such as age, gender, behaviour and socioeconomic background. The approach should be patient-centered and oral health should be considered within the context of the patient's overall health. For long-term prognosis, patient attitude and cooperation is a key-element as personal preventive care is self-performed.

7

Berglundh, Tord
Sweden

Peri-implantitis and periodontitis – two separate entities?

One of the goals in implant therapy is to maintain healthy peri-implant tissues and, hence, sufficient infection control around implants must be carried out. The tissue response to microbial challenge at implants is in most aspects similar to that at teeth. Thus, peri-implant mucositis is a reversible condition, which has many features in common with gingivitis at teeth. Peri-implantitis, however, is a lesion that is associated with tissue destruction and corresponds to the periodontitis lesion at teeth. In the presentation data from clinical and experimental studies will be reported. The clinical, radiographic and histological characteristics of peri-implantitis lesions will be demonstrated and important diagnostic criteria will be discussed in relation to periodontitis at teeth. New data on the prevalence of peri-implantitis will be presented and treatment procedures will be illustrated. The influence of implant surface roughness on the progression and treatment of peri-implantitis will be discussed.

8

Blanco, Juan
Spain

Immediate implant in the aesthetic zone

In the last decade there has been an increased interest in placing implants immediately after the extraction of the teeth both by clinicians and researchers. The short-term survival rates and clinical outcomes of this technique are similar and comparable to those of implants placed in healed alveolar ridges. The advantages of immediate implant placement have been reported to include reductions in the number of surgical interventions and in the treatment time required. It has also been suggested that ideal orientation of the implant, preservation of the bone at the extraction site, and optimal soft tissue aesthetics may be achieved. However, about this last issue data are lacking following immediate implant placement. On the other hand this technique may be adversely affected by the presence of infection, dehiscence or fenestration of the bone buccal plate, lack of tissue volume and thin tissue biotype. This lecture will highlight the biological basis, the indications and clinical outcomes of immediate implant placement in the aesthetic zone, and different clinical cases would be presented.

9

Bouchard, Philippe
France

Making a decision for the individual patient

Evidence-based periodontology is the comprehensive integration of literature evidence, clinician skills and patient preference and views. The more advanced the disease, the less likely the best evidence is available to define the limit required for tooth extraction. The practitioner has to recommend treatment, while the patient has to decide whether to go along with the treatment. Thus, patient preference is critical to the decision-making process for advanced periodontal disease. The aim of this presentation is to give a comprehensive overview of the expanding field of periodontal decision-making, through challenging clinical cases.

10

Brecx, Michel
Belgium

The use of antiseptics as part of supportive periodontal therapy

Some definitions will first be revisited: pellicle, biofilm, plaque, *materia alba* . Chlorhexidine remains the best anti-plaque and anti-gingivitis known today, and also the most tested. However because of some unwanted side effects other molecules have been investigated. Various test methods are used: *in vitro* animal studies, substantivity, four-day plaque regrowth, experimental gingivitis and long-term studies. Different products will be compared and their use will be analysed: low concentrations, non-alcoholic solutions, association with mechanical toothcleaning, etc. The use of antiseptics subgingivally will also be compared: which molecules, which concentrations, which associations mechanical vs. ultrasonics.

11

Burkhardt, Rino
Switzerland

Plastic periodontal surgery – what can achieve with a microsurgical approach?

Mucogingival surgery has moved away stepwise from the traditional problems of pocket surgery and has developed into a plastic surgical method that contains mucosal, periodontal and peri-implant problems. Beside the functional outcome, the aesthetic results became more and more important. A technique that seems to be promising to improve the results is the minimally-invasive approach with the help of magnification devices. It is the aim of this lecture to analyse the factors that lead to the mentioned advantages, to compare the results of recession coverages performed with a conventional approach with that of a microsurgically modified one. Additionally, the results of recession coverages around teeth will be compared to those around implants.

12
Buser, Daniel
Switzerland

The concept of early implants loading in partially edentulous patients – rationale and clinical procedures in daily practice

In recent years, many efforts have been made to shorten the overall treatment time in implant therapy. This is documented among others by clinical concepts such as immediate or early implant loading in fully and partially edentulous patients. Both have received a lot of attention in clinical publications or at congresses on implant dentistry. When objectively evaluating such loading protocols, the following aspects should be considered: (i) Clinical documentation to assess the predictability for successful outcome; (ii) benefit for the patient; (iii) risk level of procedure; (iv) difficulty level of procedure and (v) cost efficiency. This lecture will analyse the concept of early implant loading in partially edentulous patients according to the above-mentioned aspects and present the detailed clinical procedures.

13
Butler, Christopher
UK

Motivating change – motivating oral health

Unhealthy behaviours are the most important modifiable causes of poor health in the developed world. Their impact on the incidence and outcomes of poor dental oral and health cannot be overstated. However, the challenge that healthcare professionals face in motivating their patients to change these behaviours often appears overwhelming and thankless. We have developed a method for health professionals to help patients make positive decisions about health behaviour change. It has its roots and inspiration in the specialist counselling technique of motivational interviewing and it relies on explicit strategies for ensuring the patient and professionals achieve effective partnerships for facing tough behaviour change situations. The spirit is one of guiding and negotiation, in which the clinician provides the structure for patients to explore and then resolve ambivalence about health related behaviours, leading to changes that are clinically meaningful and resonate with the patient's world and motivation. A major advantage to our approach is that it is applicable to any health threatening behaviour, and can be tailored to even the briefest of consultations by the nonspecialist. These exciting strategies for communicating about health behaviour change will assist health professionals from all backgrounds to regain enthusiasm and improving outcomes in this difficult, but potentially most rewarding, aspect of their work.

14
Caffesse, Raul
USA

Dermal matrix

Multiple gingival recessions have always represented a significant challenge to the periodontist. Several approaches have been suggested since Harvey and Restrepo reported the original coronally positioned flap. Many clinical studies and systematic reviews have documented the successful results achieved with several approaches in treating multiple recessions. Different techniques will be presented in this panel. This presentation will describe and demonstrate the use of an acellular dermal matrix (Alloderm) as a subepithelial graft in association with a coronally positioned flap in the treatment of multiple gingival recession.

15
Camorali, Chiara
Italy

Evaluation of oral microflora in planning preventive treatment

Oral diseases are widely spread in industrialized societies therefore our efforts must be directed toward prevention and control of them. The oral cavity harbours a characteristic microbial flora with marked differences between healthy and diseased sites. A variety of factors influence the colonization of different microorganisms such as physiochemical factors, host factors and bacterial factors. During lifetime the oral microflora undergoes many modifications and when an imbalance between dental plaque challenge and host defence takes place different oral pathologies such as caries, periodontal disease, *Candida* infections can be detected. In planning preventive treatment the dental hygienist must take into consideration the microbiological pattern as well as the physical-psychological characteristics and the psychosocial-behavioural aspects that characterize each of the five main life stages: infancy, childhood, adolescence, adulthood and advanced age. The analysis of many patients' aspects will allow the dental hygienist to anticipate the oral preventive needs of the patients and design appropriate preventive protocols.

16
Cao, Cai Fan
China

Recent progress of Asian pacific countries in the field of periodontology

Aim: To briefly introduce the recent developments and problems in the field of periodontology in China.
Methods: Data and information will be searched and collected from national and local sources.
Results: The following aspects will be presented: (i) Present status of periodontal disease patterns and manpower; (ii) periodontal clinical services at different practice levels and (iii) Research activities and progress of interest.
Conclusion: Significant progress has been achieved yet we still have a long way to go.

17
Cardaropoli, Giuseppe
Italy

Challenges in the management of the extraction socket: the biological basis for the clinic

Healing of an extraction socket includes a series of events including the formation and maturation of a coagulum that subsequently will become replaced by a provisional matrix and woven bone. Further, the socket walls will be resorbed, gradually remodelled and the distinct outline of the extraction socket disappeared. When during healing a cortical ridge was established in the entrance of the socket, the immature woven bone was remodelled and replaced by lamellar bone and marrow. It was suggested that mesenchymal cells from the periodontal ligament might participate in the healing of the socket wound and that such PDL cells could differentiate into osteoblasts and produce bone. Surgically produced defects in the edentulous ridge were often used in model experiments to study *de novo* bone formation. It was suggested that the process that resulted in the resolution of such defects had many features in common with the healing of fractures in the long bone and also with the extraction sockets, however the healing seem different. Following tooth extraction the socket go under several biological

processes. Two overlapping phases named modelling and remodelling take part on the healing on an extraction site, from connective tissue formation, to bone formation and bone remodelling. In concomitance to intra-alveolar processes, same extra-alveolar bone alterations following tooth extractions have been described in the literature therefore after tooth extraction marked resorption of the alveolar ridge occurred in facial lingual direction. Immediate placement of implant in tooth extraction socket was consider favourable to preserve the bonee envelope, however this dogma is no supported from the literature. Therefore in a healed ridge could be possible that an substantial decrease of the dimension occur and bone regeneration techniques should be used to increase the quantity and the quality of the supporting bone. Several biomaterials are frequently used to augment compromised regions of the ridge and to make the edentulous site available for implant installation. It was demonstrated that different biomaterials were incorporated in newly formed bone tissue, maintained as inactive fillers and resorbed when the host tissue was undergoing remodelling. It is interesting to investigate if with the usage of biomaterials is possible to preserve the dimension of the alveolar crest, therefore support the soft tissue and improve the aesthetic appearance of the implant unit.

18

Chapple, Ian
UK

Oxidative stress, antioxidant depletion and cell signalling in periodontitis: potential for novel host modulating therapies

Periodontal tissue destruction is associated with an abnormal inflammatory-immune response to specific periodontal microorganisms in susceptible patients. Collateral tissue damage appears to result from exaggerated non-specific immune responses, which give rise to an excess generation and extra cellular release of proteolytic enzymes and oxygen radicals. Oxidative stress arises from such an imbalance between the oxygen radical generating and antioxidant defence systems of the body and the resulting tissue damage arises either directly from the stress or secondary to activation of redox-sensitive transcription factors. This presentation will review recent evidence for the role of oxidative stress and antioxidant depletion in the pathogenesis of periodontitis and demonstrate how periodontal inflammation may be down-regulated at the cell, tissue and gene transcription levels using novel and natural antioxidant species.

19

Claffey, Noel
Ireland

Periodontal maintenance: past lessons and future challenges

Various therapies for the treatments of periodontitis have been shown to be effective. On the other hand, long-term studies have indicated that some individuals continue to deteriorate and some teeth within, otherwise stable individuals continue to show progressive destruction leading to tooth loss. This indicates that the maintenance of treated patients may indeed be more critical in terms of long-term outcome than the type of therapy employed initially. Tooth type seems to be an important factor in long-term successful treatment. The maintenance of, for example, a multi-rooted tooth has been shown to be a significant problem. Patients resistant to treatment should be identified at an early stage and effective treatment/maintenance regimens employed. With the advent of osseointegrated implants new maintenance questions arise. Does the previous patient history of periodontal status influence the long-term success of implants? If so, what new strategies need to be developed both for partially dentate and edentulous individuals? What research is needed to develop our evidence base in answer to these critical questions?

20

Cochran, David L
USA

Frontiers in bone regeneration

Bone regeneration is the basis for implant site development and for replacing the predominant missing tissue in periodontal defects. Strategies in the past have focused on the use of filler materials and/or the use of physical barriers. Much research today has focused on enhancing filler materials and designing carrier matrices. In most cases, the rationale for these approaches is to stimulate the bone healing process by jumpstarting a cascade of events or by assistance to the normal healing process. Bone regeneration therapy will be discussed in light of the rationale for the approach.

21

Cortellini, Pierpaolo
Italy

The use of barrier membranes: is it still a valid alternative?

Guided tissue regeneration, i.e. periodontal regeneration with barrier membranes, is celebrating its 'Quarter of a Century' anniversary. Research and developments in the field of regeneration have brought to the attention of the periodontal/dental community new concepts and new products to become reliable alternatives to GTR. The use of barriers is burdened by some clinical implications and complications like difficulties in application, need of a second surgery (for the non resorbable barriers) and frequent occurrence of membrane exposure. On the other end, skilled use of membranes has been proven to result in minimal amounts of side effects, and tens of papers have so far proven efficacy, predictability and long-term stability of the clinical results. In addition, this regenerative approach still seems unbeatable when the target area is associated to a non-supportive 1 or 2 wall infrabony defect. In these instances the need for a support of the soft tissues indicates the use of self-supporting barriers or supported barriers (combination therapy), to avoid the collapse of the gingival flap with associated reduction of the regenerative space and subsequent recession of the gingival margin. Thereby GTR can still play a relevant role in periodontal regeneration, especially when one of the objectives of therapy is minimise the recession of the gingival margin.

22

D'Aiuto, Francesco
Italy

Genetic influences on host and tissue responses in periodontal therapy

Periodontitis is a prototype chronic low-grade infection caused primarily by anaerobic gram-negative bacteria in susceptible individuals. Genetic differences may play an important role in disease pathogenesis and clinical presentation but the evidences produced in the last decades remain inconclusive. We discovered that carriage of rare genetic variants in inflammatory genes (i.e. IL-6, IL-1 and TNF-α) might play a role not just in the pathogenesis of periodontitis but also influence patients' response to standard periodontal therapy. Research from our group resulted in an

association between IL-6 polymorphism and the severity of periodontal destruction as well as the level of systemic inflammatory response associated with periodontitis. Furthermore we introduced the concept that periodontitis and its treatment could represent a useful model to study human inflammation. This idea originates from growing evidence that periodontal infections are associated with and contribute to the systemic inflammatory burden of affected individuals. Specific genetic variants in key inflammatory genes (i.e. CRP, IL-6) are indeed associated with consistent differences in acute release of cytokines following periodontal instrumentation (inflammatory stimulus) as well as in clinical outcomes.

23

Demirel Korkud
Turkey

Innovative approaches in pink aesthetics

Aesthetic considerations became part of the periodontal treatment planning in the last 10 years. Recent advances in the adhesive dentistry and extended prosthetic treatment demands leaded to new periodontal treatment strategies. Pre-prosthetic periodontal treatment planning focuses on tissue biotype, crown lengths, ridge deficiencies and recessions. When the periodontal treatment precedes prosthetic work, time management becomes part of the treatment plan. Shorter healing periods, technically demanding surgical procedures and high level of predictability became major concerns in aesthetic treatment modalities. Minimizing the surgical trauma became the centre of aesthetic periodontal approach fulfilling these requirements.

24

Echeverría, Jose Javier
Spain

Maintenance care: twenty-five years in retrospective

Aim: The aims of this retrospective study were to determine the compliance and tooth loss of a group of periodontal patients 25 years after finishing active treatment.
Material and methods: A total of 371 patients treated in 1980–1981 in a private periodontal practice by a single periodontist (JJE). Patients were assigned to four groups according to ADA classification. Compliance and tooth loss were determined in ADA IV cases in 1987, 1993 and 2005.
Results (ADA IV case patients): The sample included 123 patients. Out of these patients, 109 (1987)/92 (1993)/52 (2005) were complete compliers. 46.7% of initial patients were compliers after 25 years. Tooth loss after 25 years was 3.7 per patient (0.15 patient/year). Percentage of lost teeth (all reasons) after 25 years was 15.7.

25

El Jaffali, Karim
Morocco

Epidemiology and diagnosis of aggressive periodontitis

A periodontal destruction is diagnosed in some children and young adults. In children from 5 to 12 years old, periodontal inflammation without clinical or radiographic evidence of periodontal attachment loss can be detected around the maxillary central incisors and molars. In young adults (10 to 18 years old), deep periodontal pockets are measured and radiographic examination evidence advanced vertical osseous defects (Baer, 1971; Lindhe 1998). The aetiopathogenesis of this disease is complex and has not yet been elucidated after more than 40 years of scientific research. The periodontal infection by a microbial complex with negative Gram (Slots 1976, Liljenberg and Lindhe 1980) dominated by *Actinobacillus actinomycetemcomitans* (Aa) (Zambon & Al, 1983; Gunsoley & Al, 1990) seems to be at the origin of this periodontal entity; the presence of Aa seems to be related to the young age of the patients (Asikainen 1986). The rate of prevalence varies strongly according to geographical areas' and within the countries according to the race and the socio-economic conditions (Zambon & Al, 1983; Albandar & Al, 1997; Gjermo, 1998). In addition to the clinical aspect of the various aggressive forms of such periodontitis we will insist on the importance of the early tracking of aggressive periodontitis forms and on the risk of undetected periodontitis mostly when associated to orthodontic treatment of young patients. The clinical diagnosis remains certainly to be the 'Gold Standard' for the detection of such diseases and constitutes the base of any therapeutic surgical approach (Christersson & Al, 1997) or non-surgical approach (Baer & Socransky, 1979; Slots & Rosling, 1983; Genco, 1981; Van Winkelhoff & al, 1994; Pavicic & al, 1994).

26

Ellingsen, Jan Eirik
Norway

Biointegration using new surface technologies

The implant surface qualities as the microtexture, chemistry and biological properties are significant for the tissue responses following an implantation into the bone. Although titanium implants covered with a natural titanium dioxide surface layer gives a well documented and acceptable tissue response, modifications of the surface chemistry, oxide crystal structure or the morphology at the nanoscale level have potential to trigger the healing responses of the bone tissue. Such a triggered healing response may give a booster of the natural growth factors, increased levels of transcription factors for differentiation of precursor cells into osteoblasts and calcium phosphate nucleation at the implant surface. These effects will clinically be observed by improved bone healing including a faster integration and more supporting bone to the implant and will thus have important clinical significance. Several strategies have been presented recently including electrochemical oxidation, changes of the surface wettability and chemical modification of the surface oxide; all with the aim of improving the bone regeneration following implantation. Among these different strategies, which will be discussed, modification of the titanium oxide layer by the uses of fluoride has demonstrated significant and clinically important effect of the bone healing process. This documented bone promoting activity has been identified and observed in laboratory *in vitro* tests as induction of calcium nucleation, effects on osteoblast cells as well as *in vivo* calcification of bone. These results will be used as examples for the importance of the implant surface quality for clinical success and the potential for further improvement of tissue regeneration.

27

Etienne, Daniel
France

Real time computed navigation and implant placement

Surgical Implant placement needs a surgical training and some expertise to overcome challenging clinical situations. Ideal positioning of implants will require three-dimensional (3D) orientation and accuracy for mandibular canal or maxillary sinus proximity, zygoma and pterygoid implant placement, angulated root of neighbouring teeth or aesthetic. Real time computed navigation has been developed in medicine for brain, ENT, orthopaedic surgery. In spite of manufacturer claims of precision, surgeons complain on the cost of the systems, a variability of the obtained spatial position due to

several factors like: instrument guidance, imaging, fiducials, hardware, software. On top of these difficulties, we will need in dentistry a friendly system, a true 1 mm precision range, in spite of a flexible mandible, tooth mobility or an edentulous status, metallic restorations. We will review in our presentation the technical requirements necessary to keep the final precision in a predictable 1mm range, the draw-backs in measurements methodology and the solutions and data obtained with the various systems on the market.

28

Firatli, Erhan
Turkey

Therapeutic strategies for periodontal disease management: vaccines, chemotherapeutics and stem cell applications

Periodontitis is characterized as the destruction of periodontal ligament, alveolar bone and cementum. Periodontitis has two main aetiological components, which are interacting each other, the microorganisms and the host. The advancement of the current knowledge on the pathogenesis of periodontitis has resulted in new treatment strategies addressing the role of host response against the microorganisms, pharmacotherapeutic advancements, and motivating the stem cells of the host to gain improvements for the management of periodontitis. The infectious aetiology of periodontitis is complex and no curative treatment modality exists. The aim of the vaccine studies is to enhance the host's immune response against the pathogenic microorganisms. There are evidences of the impact of natural, passive and active immunizations can induce protective antibody responses in humans and possible alterations on the composition of the subgingival microflora. It has been shown that immune responses to whole bacterial cell or purified proteins can be considered as vaccines in different animal models. The data from various studies show that immunization reduces the rate and severity of bone loss. This type of immunization is accepted to be more feasible than active immunization studies. The adjunctive use of host modulatory therapy, when used adjunctively can enhance therapeutic responses, slow the progression of the disease, and allow for more predictable management of patients, particularly in those patients at increased risk caused by factors beyond the reach of conventional therapeutic approaches. The use of non-steroidal anti-inflammatory drugs (NSAIDs) to inhibit non-selective cyclooxygenase-1 (COX-1) and selective cyclooxygenase-2 (COX-2) can be useful for the stabilization of periodontal conditions by reducing the rate of alveolar bone resorption. The impact of the NSAIDs is achieved through local inhibition of both enzymes (e.g. COX-1 and COX-2) which are responsible for the synthesis of arachidonic acid metabolites. The major goal of regenerative therapy is the reconstruction of the destroyed periodontium. The experimental studies in field of tissue engineering show that the stem cell application can be the new strategy to periodontal tissue regeneration. Stem cells have been identified in a variety of adult tissues as a population of pluripotential self-renewing cells. Stem cells can be isolated from blood, bone and bone marrow; expanded *in vitro* and cultured with bone morphogenic proteins, growth factors, adhesion molecules; these cells commit to lineages that lead to the formation of bone, cementum, dentine and the periodontal ligament. Stem cells can be embedded in a scaffold and applicated into periodontal osseous defects. The osseous defects heal with new bone, cementum and periodontal ligament. Stem cell applications and biomodulation can provide successful periodontal healing. The further progress leads to a safe and effective application of stem cells, vaccines and pharmacotherapies which target host response mechanisms to support the traditional therapeutic interventions may represent a new modality of the treatment and management of this chronic disease.

29

Flemmig, Thomas
Germany

New antimicrobial technologies

In the treatment of periodontitis, most procedures are directly or indirectly aimed at reducing the number of periodontopathic bacteria in contact with the periodontal tissues. Although several methods have been shown to be effective in achieving this goal, they are often technique sensitive and require considerable treatment time. New antimicrobial technologies have been developed to support or replace established treatment methods in order to improve the effectiveness and efficiency of periodontal therapy and to enhance patient comfort. Recent innovations in this area including local delivery devices, photodynamic disinfection and injection-abrasive water jets will be presented and their clinical outcomes and economic benefits critically discussed.

30

Floyd, Peter
UK

Introduction and critical review

There are many difficulties associated with placing implants in the posterior maxilla. Bone quality can be poor and there is often a reduced height of bone available between the alveolar crest and the floor of the antrum. Where the height of available bone is minimal there is a choice to be made between using short implants or increasing the height of available bone by sinus grafting, thus enabling longer implants to be placed. The success of implant therapies in the posterior maxilla will be compared with that of periodontal treatment.

31

Gardella, Jean Pierre
France

Immediate or early aesthetic of implant supported restorations: a current treatment. Modality in aesthetic areas

Immediate or early aesthetics with implants is today a current treatment request. According the literature and our clinical experience, under some conditions we want to focus on, immediate aesthetics can be a clinical routine value. Because the need for immediate or early aesthetics is definitively most obvious to restore the aesthetic appearance, this recent surgical approach allows us to shorten the treatment time and to increase the patient comfort and satisfaction. Nevertheless, we have to keep in mind that, if on one hand this treatment concept deletes temporization problems, on the other hand it should create some risks we have to identify. Patient selection is always the main key for decision-making: bone quality and healing potential as pre-prosthetic evaluation or anatomical aspects of edentulous sites are such aspects to check before surgery. At last we must specify the temporary emergence profile properties and its relationship with the mucosa at surgery and early healing stages.

32

Genco, Robert J
USA

Diabetes mellitus, obesity and periodontal disease interactions: clinical implications

There is convincing evidence that patients who suffer from diabetes mellitus are at greater risk of developing periodontal disease and

conversely, diabetic patients with periodontal disease have poorer glycemic control than periodontally healthy patients with diabetes. Furthermore, there is evidence that treatment of periodontal disease in patients with diabetes leads to better glycemic control as evidenced by reduction in glycated haemoglobin, at least in the short term. There is strong evidence that obesity is a risk factor for diabetes, and recent evidence suggests that obesity is also a risk factor for periodontal disease. Clinical, molecular and epidemiological studies relating to the association of obesity, diabetes and periodontal disease are emerging that help us understand the molecular basis of these relationships, and their clinical implications. Furthermore, the relationship between periodontal disease and increased risk for diabetes-related cardiovascular disease, and new findings showing an increased risk also for diabetic nephropathy, are important considerations in managing these chronic, devastating diseases. The clinical implications of these findings will be presented and future research needs discussed.

33
Giannobile, William
USA

Periodontal tissue engineering, where are we today?

Repair of alveolar bone and soft defects caused by chronic periodontal disease is a major goal of oral reconstructive therapy. The field of periodontal tissue engineering combines advances in materials science and biology to repair tooth-supporting structures and for whole tooth engineering. This presentation will discuss some of the challenges faced in the restoration of tooth/implant-bone interfaces for regeneration including microbial, host response and tissue engineering concepts. Future applications for the repair of tissues will be presented including the use of protein, cell and gene therapy to target biomimetic molecules to periodontal lesions.

34
Glauser, Roland
Switzerland

Are preventive extractions indicated to preserve bone for implant placement?

The use of dental implants for replacing missing teeth has been documented as a very predictable treatment modality. When looking at a tooth at risk it is obvious that its prognosis is key for treatment planning. Thereby, the predictability of supportive periodontal treatment is assessed vs. replacement using a dental implant. Furthermore, as a consequence of advanced periodontal disease unfavourable local conditions of the alveolar ridge may provide insufficient bone volume for placing dental implants. Moreover, following extraction a certain amount of tooth-supporting bone is resorbed and immediately placed implants *per se* cannot prevent these events. This presentation will (i) discuss ridge alterations to be expected following tooth extraction and (ii) summarize on the predictability as well as on the limits of today's techniques available to re-built bone volume before or in combination with implant placement.

35
Goldstein, Moshe
Israel

Implants in the compromised aesthetic zone: materials, techniques, decisions

Implants placement in sites with deficient soft tissue and atrophic or anatomically problematic alveolar bone is a daily challenge of the periodontist. The aspiration to place implants in an ideal position towards an optimal restoration of the missing tooth is one of the most demanding challenges of modern dentistry. The dental team has nowadays a wide range of techniques and materials for soft tissue reconstruction and bone augmentation, but it is not always clear how, when and in which sequence to use them to achieve the best possible end result. Some times, decisions are dictated by 'short cut' considerations, and in other instances doctors make 'non-decisions' due to insufficient knowledge regarding the possible treatment possibilities. In most of these instances, the decisions regarding the best treatment plan will be wrong and the result functional or aesthetic failure of the final prosthesis. The aim of this lecture is to present the decision-making strategy, and the correlating treatment stages when placing implants in potentially problematic sites.

36
Grunder, Eli
Switzerland

Immediate placement of implants and the aesthetic outcome

To place implants has become a routine procedure, and results can be achieved with high predictability. The most challenging field is still the aesthetic zone. Optimal hard and soft tissue quantity and quality are the key factors for success. The tendency to reduce treatment time by placing implants immediately after tooth extraction is not a benefit for the aesthetic outcome in most of the cases, since bone resorption will be seen in these cases after tooth extraction, in other words we will have to correct hard and soft tissue volume. The surgical procedure can be planned based on the pre-operative situation, whereby the difficult lies in selecting among a variety of surgical methods the one that can offer the best possible aesthetic result in each particular case. This presentation will discuss: (i) Case selection for immediate or delayed implant placement; (ii) the effect of tooth extraction related to tissue volume and (iii) different concepts for replacing teeth with implants in the aesthetic zone.

37
Hämmerle, Christoph
Switzerland

Challenges in the management of the extraction socket: the treatment concept from Zurick

Implant therapy in conjunction with extraction sockets is a very demanding procedure. A successful and predicable implant therapy starts with a locally and systemically related risk assessment. Based on risk assessments individual treatment strategies for implant timing, soft tissue regeneration and bone regeneration are necessary. Timing of the implant placement is of great importance. It should be based on the morphological, dimensional and histological changes that follow tooth extraction. Immediately after tooth extraction biological processes are initiated, which lead to bone resorption and soft tissue alterations. Furthermore, it has been demonstrated that at immediately placed implants and prosthetic reconstructions the buccal soft tissue level is difficult to predict. In addition, following abutment connection surgery or transmucosal healing a buccal mucosal recession is to be expected. Hence, in critical situations with a thin tissue biotype it is recommended to let the soft tissues heal for 6–8 weeks (delayed implant placement). In sites with a thin tissue biotype and a lack of keratinized mucosa or soft tissue deficiencies, additional soft tissue regeneration techniques before implant placement or bone regeneration are mandatory. In the past decade, the use of 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 are responsible for the choice of

materials. Data have shown that dehiscences, fenestrations and infrabony defects can successfully be treated with resorbable membranes made of collagen and membrane supporting materials. Due to the better space-making capacity of non-resorbable ePTFE membranes they are indicated in larger defects. Following successful integration of the implant, the mucosal tissues often need to be conditioned in order to achieve a natural emergence profile for the final reconstruction. This is normally achieved by use of temporaries. Often times, additional soft tissue grafting is necessary. Predictability of these procedures is higher before the implant has a connection to the oral cavity. In an attempt to improve the aesthetic appearance of artificial crowns, all ceramic materials have been developed for the restoration of implants and teeth. In addition to the crowns, ceramic abutments for implant restorations are applied to improve colour and translucency of the abutments in comparison to traditional metallic ones. The primary materials of choice include alumina and zirconia ceramics. Although, functional and aesthetic restorations on implant placed into extraction sockets are frequently achievable, a number of questions allowing for predictability of optimal treatment outcomes remain to be answered.

38

Heijl, Lars
Sweden

Enamel proteins in periodontal regeneration – from idea to established product on the market

During recent years biology-based rather than 'mechanical' strategies for periodontal regeneration have gained more acceptance. However, although a solid scientific rationale exists for the use of extracellular matrix proteins as well as a variety of growth and differentiation factors in surgical treatment aimed at periodontal regeneration, only a small number of new products have so far entered the marketplace. The rationale behind the idea of using enamel matrix-induced periodontal regeneration is based on the discovery that enamel matrix proteins play a key role in nascent formation of the tooth root and the tooth attachment apparatus. This is a novel approach since these proteins do not fill the periodontal defect (as does a bone graft), nor do they prevent gingival tissues from coming into contact with the root surface nor do they provide space maintenance (as does a GTR barrier). However, enamel proteins appear to have the capacity to engineer the periodontal defect. The non-clinical and clinical testing performed not to raise safety or effectiveness concerns and to meet with regulatory requirements for the European and US markets and the post-marketing surveillance studies performed to make enamel proteins (Emdogain®) an established product in the market place will be described. In summary, it appears that based on the presently available Emdogain® documentation, the periodontal community has fully accepted that Emdogain® fulfils all requirements for an established product in regenerative periodontal treatment. Furthermore, experience from the use of enamel proteins indicates a future revolution in periodontal regenerative therapy for biology-based approaches, where bioactive substances will be used to mimic nature's formation of functional periodontal soft and hard tissues.

39

Henning-Abrahamsson, Kajsa
Sweden

Managing behavioural change to achieve oral health

Managing behavioural change to achieve oral health is a difficult task and a great challenge for dental professionals. Thus, some patients fail to turn into 'successful cases' and do not follow treatment recommendations and given health advice. How can we then succeed? What do we know and what can we rely on as oral health care workers? Can we implement conclusions from systematic reviews in daily clinical practice i.e. evidenced based oral health care? This presentation will focus on the questions raised above and different factors that may have influence on patients' willingness to attend to prevention and treatment programs will be discussed.

40

Herrera, David
Spain

Microbiological impact of basic therapy: can be improved by the 'full-mouth disinfection' approach?

Periodontal diseases are a group of diseases of bacterial aetiology, characterized by destruction of the periodontium. The microbiota associated to these diseases is complex, since more than 500 different bacterial species have been identified in the subgingival biofilm. However, only a small group of 10–15 species are considered important for progression of destruction. The standard treatment of periodontitis remains highly unspecific, consisting on the mechanical debridement of the affected root surface with the objective of reducing the total bacterial load and changing the environmental conditions of these microbial niches. This unspecific therapy has proven clinical efficacy on a long-term basis. However, due to the infectious nature of periodontitis, microbiological goals should be also achieved after therapy. The first task of the presentation will be to define microbiological goals of periodontal therapy, and to define the proper variables and techniques to assess the previously defined goals. In the second part of the presentation, the microbiological impact of basic periodontal therapy will be reviewed, in terms of the selected variables and goals, as reported using different microbiological technologies. And, in the third part of the presentation, new approaches to improve the microbiological results of conventional basic therapy will be discussed, specially focussing on the 'full-mouth disinfection' approach.

41

Herrero, Mariano
Spain

Biomechanical risk factors for implant therapy

Traditionally an inadequate biomechanical design of the treatment has been proposed as risk factor of failure for the therapy with dental implants. The biomechanics in implant therapy include different aspects. The load created in the use of the implant-retained prostheses. The forces created by the specific characteristics of the patient (parafunctional habits,). The forces developed in the system fixture-abutment-prostheses (preload, passive fit, ...). The response of the peri-implant tissues, and specifically of the peri-implant bone, to the transmitted forces (quality of bone, surface of osseointegration, …). The prostheses design and its influence in the development of different loads (occlusal pattern, vertical dimension, use of cantilever, …). The macroscopic implant design and its relationship with the force distribution. The biomechanical outline is influenced by the time of loading (immediate-loading, early-loading, delayed-loading), being the transmitted forces to the peri-implant bone inducer of a different response depending on the load magnitude. Overload has been proposed as an aetiological factor of implant failure. The biomechanical aspects of the implant treatments could have an important influence in the treatment development. Different authors related several clinical signs of overload such as prostheses mobility, screw loosening, bone resorption, …, trying to establish a relationship between the clinical aspects and the overload, before the implant failure. In this presentation it will be suggested certain

biomechanical principles to use in implant treatment to avoid the overload like a risk factor of implant failure.

42

Hovius, Marjolijn
Netherlands

What can tobacco cessation techniques teach us?

Prevention plays an important part in the work of a dental hygienist, but the advantages of oral hygiene habits are not evidence based in regard to chronic periodontitis. Plaque and gingivitis reduction is only achieved in the short term in most of the studies available. Thus it is time to consider if there are other ways to achieve results. Tobacco cessations techniques work. It would seem wise to implement these techniques in motivating patients to improve their oral hygiene habits. The five A's, Ask, advise, assess, assist and arrange, the stages of change model and motivational interviewing will be discussed and how these can be used by the dental team to achieve better results.

43

Hughes, Francis
UK

Use of recombinant bmp technology in periodontal regeneration

Bone Morphogenetic Proteins (BMPs) are a group of growth and differentiation factors with powerful osteo-inductive properties. Pharmacological application of recombinant BMPs strongly induce orthotopic and heteropic bone formation, an observation, which has resulted in their commercial development for orthopaedic, craniofacial and dental therapeutic applications. In animal studies, BMPs induce new bone and cementum formation in periodontal defects, and can stimulate osteoblastic differentiation of periodontal ligament cells *in vitro*. From all of the above, the major challenge now facing the clinical scientist is the translation of this technology into a clinically useful regenerative periodontal therapy. Specifically, three particular issues may need to be resolved properly for this to happen: (i) How do we deliver BMPs to the periodontal defect? (ii) What are the theoretical and practical limitations of the effects of BMPs in the periodontium? (iii) Can we improve on existing regenerative therapies sufficiently to obtain a suitable cost/benefit ratio to justify the use of this technology? This presentation aims to describe the biology of BMP activity in periodontal regeneration and to consider the mechanisms, which might limit the utility of these proteins, including the role of specific BMP-inhibitors. It will also address the particular clinical issues of delivery systems, practical limitations and likely cost/benefit ratios of BMP use in periodontal regeneration.

44

Hurzeler, Markus
Germany

Critical assessment of immediate loaded post-extraction implants in the aesthetic zone

The treatment concepts in aesthetic implant dentistry have dramatically changed over the last few years. At the beginning of this area the 'staged approach' was introduced, i.e. extraction of the tooth, waiting for 8 weeks, augmentation of the defect, after 3–4 months implantation and after another 4 months the implant is uncovered and the prosthetic treatment is followed. Currently, the 'single step procedures' with immediate placement of implants and immediate provisionalization seem to become more and more a routine method with implants in the aesthetic zone. This technique is not so time consuming and presents a cost effective approach. However, there is clinical evidence that the risk for failures and the potential to overstretch the limitation of this simplified implant procedure (i.e. the 'single step procedure') is increased. Therefore, it is important to know the specific clinical problems and the anatomical limitations of the single step implant procedure. This presentation will focus on the parameters, which need to be met for the different treatment concepts with implants in the aesthetic zone. The clinical procedures will be presented step-by-step.

45

Izakovicova, Lydie
Czech Republic

Use and validity of biological diagnostic methods in periodontal treatment

(Complex approach in understanding the role of genetic and environmental factors in periodontitis)

The evidence that periodontitis does not afflict all people and does not progress in a continuous manner, changed our understanding of the nature of periodontal disease in the last two decades. The events associated with the development of periodontitis can be divided into bacterial infection, genetic susceptibility, metabolic responses, and anatomical changes, each of which should be considered when diagnosing periodontal conditions. New developments in the relationship between the external (environmental) and internal (endogenous) risk factors, as well as principles for risk prediction and establishment of risk profiles will be discussed. This presentation will critically assess: (i) need for diagnostic tests; (ii) test requirements; (iii) rationale for the use of different diagnostic tests, their sensitivity, specificity and predictive values and (iv) advantages and limitations of the current methods. Prospects can be seen in integration of results of the current and newly developed methods, which will not be used independently but in the framework of a complex approach to the factors participating in the periodontitis aetiopathogenesis.

46

Jansaker, Anne Marie
Sweden

Biological risk factors for implant therapy

Biological complications do occur around implants. Early complications, before osseointegration occurs may be related to surgical trauma, post operative infection or overload. Late biological complications, occurring after the implant is osseointegrated may result in partial or total loss of osseointegration. Peri-implantitis is characterized by progressive marginal bone loss with clinical signs of inflammation. Shortly after haling of the newly placed implant, the sulci are colonized with micro biota similar to the one in periodontal pockets. It is demonstrated that mucositis occur around an implant if plaque is allowed to accumulate. Experimental studies in animals have demonstrated that peri-implantitis occur, if a ligature enhancing plaque growth is placed around the implant. For many years, long time studies on implant treatment only reported on survival rates and rarely mentioned biological complications, such as peri-implantitis. However, recently a few papers have presented data indicating that as many as 15–20% of the patients with implants demonstrate progressive bone loss, at one ore more implants after 10 years. Patient related risk factors such as an altered immune response, smoking and genetic factors have been suggested to be related to the development of peri-implantitis. Accordingly, periodontitis patients may be at higher risk for developing peri-implantitis if they are treated with implants. On a local level presence of plaque and the amount of

keratinized mucosa have been implicated to be of importance. It is important for the clinicians to access the risk factors for complications, and to recognize early signs of biological complications, as the effect of treatment of peri-implantitis is difficult to foresee. Few comparative studies on treatment alternatives of peri-implantitis exist. As present the advice must be, prevent these complications by good diagnosis and early intervention.

47

Jeffcoat, Marjory
USA

Women's health and periodontal disease

Periodontal Disease and Prematurity
Preterm birth, resulting in babies born too little and too soon, is a major cause of morbidity today. Evidence indicates that infections can be major risk factors in preterm birth. Studies point to an association between periodontal infection and increased rates of preterm birth with an increased risk for preterm birth in women with periodontal disease ranging from 3.0 to 7.9. Large-scale studies are discovering that women with the most severe periodontal disease have the highest incidence of preterm births. Of course the most pressing question is what forms of therapy would be most helpful in decreasing the risk of preterm birth due to periodontal disease. A recently published pilot intervention trial has shown that pregnant women with periodontal disease have a lower incidence of prematurity than untreated women. In fact the incidence of prematurity was reduced nearly 80% in women receiving periodontal treatment. Early data indicates that treatment of 1000 high-risk women has the potential to save $16 Million in health care costs. **Osteoporosis and Periodontal Disease: Is there a relationship** Osteoporosis and osteopenia are characterized by reductions in bone mass, and may lead to skeletal fragility and fracture. In 1994 the World Health Organization defined osteoporosis as a bone mineral density level more than 2.5 standard deviations below the mean of young normal women (WHO, 1994). Risk factors and treatment for osteoporosis and periodontal disease will be reviewed as well as the potential inter-relationship of the two diseases. The results of a multicenter clinical study in 335 patients with periodontal disease will be received. Subjects were randomised to receive 70 mg of alendronate weekly or placebo. Subjects taking alendronate who had with low mineral density at baseline had a significant improvement in alveolar bone height compared with the placebo treated subjects. Analysis of the safety data revealed no evidence of osseo-necrosis of the jaws. Furthermore, in a separate retrospective study of 22 consecutive patients who were treated with dental implants and were taking alendronate there was no evidence of implant failure or osseo-necrosis of the jaws.

48

Jepsen, Soren
Germany

Treatment of furcation involvement: furcation therapy – resective or regenerative

Furcation involvements present one of the greatest challenges in periodontal therapy because furcation-involved molar teeth respond less favourably to conventional therapy than non-involved molar or non-molar teeth. In the past, several techniques have been proposed and promoted to treat furcated molars and thereby improve their prognosis. Various resective but also regenerative methods have been tested with the aim of eliminating the furcation or reducing the furcation depth. This lecture will review the outcomes of both resective and regenerative approaches based on the available evidence from controlled clinical trials.

49

Jung, Ronald E
Switzerland

Biological tissue stimulation, a part of implants dentistry

Further developments in bone augmentation procedures can either be related to simplification of the clinical handling or influencing biological processes. Biological tissue stimulation with to use of growth factors or bioactive proteins and peptides in combination with adequate carrier systems are nowadays able to stimulate the natural regeneration process, to accelerate bone regeneration and to increase predictability in bone regeneration therapy. The use of a newly developed synthetic carrier system together with a biologic active factor has demonstrated similar amounts of newly formed bone in experimental defects as the use of autogenous bone. It can be concluded that biologic tissue stimulation with the use new matrix systems has the potential to overcome some of the present difficulties in GBR procedures.

50

Kamma, Joanna
Greece

Microbiological profile and treatment of patients with aggressive periodontitis

Aggressive periodontitis represents a complex form of periodontal disease observed in apparently healthy young adults, characterized by severe attachment loss and bone destruction. Early onset of destruction may suggest a highly virulent microflora and/or a particularly susceptible host. In addition, genetic and environmental factors (smoking and stress) are strongly associated with rapid attachment loss and severe periodontal destruction. Microbiological testing and biochemical assays are potential diagnostic tools, which may prove useful in defining disease causes and guiding towards comprehensive treatment planning and therapy. Currently, mechanical debridement and adjunctive antimicrobial therapy aim to alter microbial ecology, thereby arresting or slowing down disease progression. Furthermore, surgical therapy targeted towards alteration of post-treatment anatomic sequelae, may eliminate potential niches for bacterial re-colonisation. Finally, research evidence suggests that, following treatment, individuals may present a high risk of developing recurrent breakdown despite frequent maintenance. Meticulous, preventive supportive periodontal treatment regimes combining frequent visits in addition to comprehensive evaluation is important for controlling the progression of aggressive periodontitis.

51

Khoury, Fouad
Germany

The use of bone grafting: indications and limitations

Unesthetic restorations in implant prosthetics most frequently can be traced to faulty implant placement and to bony and soft tissue alveolar ridge defects. Use of various hard and soft tissue augmentations techniques can help to get satisfaction with the end result. Reconstruction of the alveolar ridge and the bony contours of the maxilla and the mandible have become routine and evidence based. A various of augmentation procedures, including lateral bone grafting, onlay or 3D reconstruction are used. Since 1984, autogenous bone grafting were utilised in conjunction with implants for aesthetic and functional rehabilitation. In the majority of the cases the bone block grafts were harvested from the mandible using specially designed instrumentation (MicroSaw).

This bone was used for various augmentation procedures (e. g. lateral & onlay/3D grafting). Based on the results of this long-term Study, a concept was developed to minimise complications such as graft infection and non-integration through the following parameters: (i) the techniques of augmentation with mandibular bone block were modified to increase the number of regenerated and vital osteocytes in the grafted area; (ii) bone grafts are protected with two-layer closure. In the maxilla, this was accomplished with a palatal connective tissue flap and (iii) the risk of exposure of large onlay bone grafts was reduced through a tunnel preparation. This presentation describes practical aspects of those techniques that make possible long-term, aesthetic and functional implants.

52
Kinane, Denis
USA

The importance of host related factors: susceptibility, risk factors, clinical relevance

The purpose of this presentation is to outline the aetiology and pathogenesis of periodontal disease in a manner that is clinically relevant to practitioners of periodontics and general dentistry. To accomplish this, it is important to review susceptibility, risk factors and to clearly outline the clinically relevant aspects. The host response in periodontal disease involves the processes that render a subject susceptible to disease and those implicated in the chronic inflammation characteristic of periodontitis. If we consider all aspects of the 'host response' we need a course rather than a lecture, so we will focus on what is clinically relevant. It is a difficult task to determine what is truly of 'clinical relevance', that is, 'those features which if present change our clinical decision making and patient management'. Clearly there are different forms of periodontitis, different rates of susceptibility to these forms, different responses, different genetics and risk factors at play and different modifiers of these diseases. All of these factors are based on variations or modifications of the host response and are thus pertinent to this current review. This overview will revisit what we know about the chronic inflammatory processes in periodontal disease and outline susceptibility factors for the periodontal diseases so as to provide knowledge, which will assist the clinician in the management of the disease.

53
Kocher, Thomas
Germany

Tooth retention and periodontal treatment

At the present time insertion of implants is very popular and convincingly high success rates are presented for 10-year survival rates. It seems to be forgotten, that tooth survival rates are not at all worse than implant survival rates. On a tooth level retention rates show, that even molars with furcation involvement have a survival rate of 90–95% over 10 years, mobile teeth and teeth with a reduced periodontium of about 95%. Thus even at a tooth level severely periodontally damaged teeth have a survival rate comparable to implants. Considering the proportion of patients loosing teeth during follow up shows that only a small fraction of subjects (about 10%) suffer from severe loss of teeth. Thus there are few (or no?) convincing reasons to extract teeth for socket prevention. Methods to select these 10% of subjects at high risk, who may be better off with extraction for socket prevention, are necessary. The long term success rate of tooth survival is influenced by the rate of teeth extracted during initial or cause related phase. However the periodontal community does not have any guidelines what are indications for extractions of 'hopeless' teeth. Besides teeth and patients at risk there are also offices at risk for teeth. Based on a population based study in East Germany (SHIP) we try to develop a scheme to characterize a dental office as favourable for tooth retention or not. In this presentation preliminary results are presented on this issue.

54
Kornman, Kenneth
USA

Where are we going? Following current roads to the future science and clinical practice of periodontology

Predictions of the future in any field are most likely going to be wrong, and this is especially true if one is attempting to predict the distant future. That is however very different from identifying current trends and explicitly evaluating what the trends are telling us about the next advances in the field. This presentation will attempt to identify some of the existing trends in periodontology and medicine and discuss the potential impacts of those trends on the clinical practice of periodontics. The current knowledge in periodontology defines three primary domains that have been the basis of practice and research in the field for many years. Those domains are: (i) prevention, (ii) treatment and (iii) management of disease sequelae. In the past 15 years both research and clinical practice have greatly expanded the focus on management of disease sequelae, including systemic implications of periodontal disease and the management of tooth loss. This presentation will discuss the technology and practice trends in the three domains and suggest what the trends may be telling us about the next advances in the field.

55
Laine, Marja L
Netherlands

Genetic mapping of the periodontal patient

An important challenge in genetic mapping of the periodontal patient is to locate disease affecting genes and gene variants (polymorphisms). Identification of the genetic polymorphisms will aid to study the disease pathophysiology, to improve disease classification, screen for high-risk individuals, and ultimately to help prevent or cure the disease. Previous studies have mainly focused on the candidate gene approach. In spite of intense research there are still many unsolved problems, both in identification and localization of disease modifying and causative gene polymorphisms, and in understanding the underlying biology of periodontitis. Since periodontitis is a complex disease with besides genetic factors also microbial and environmental factors it is necessary to set up large multidisciplinary and integrated studies. This presentation will discuss (i) the current state of genetic mapping in periodontitis and (ii) the gene-gene and gene-environment interactions in periodontitis.
Acknowledgement: Supported by NGFN and the INFOBIOMED network, 6th R&D Framework, EC (IST 2002 507585).

56
Lang, Niklaus
Switzerland

Treatment strategies for peri-implant infections

It is of utmost importance to diagnose peri-implant mucositis and peri-implantitis at an early stage in order to intercept with supportive therapy to arrest existing infections. As diagnostic test parameters from the periodontal field appear reasonable to be used. Among those, peri-implant probing test, presence or absence of bleeding upon probing, subppuration and radiographic evalu-

ation can be recommended. Implant mobility, however, constitutes a highly unsensitive but highly specific sign of a complete loss of osseointegration leading to the loss of the implant. Increased probing depth and consistent bleeding on probing have been demonstrated to have reasonable diagnostic accuracy for the discovery of peri-implant lesions. Since peri-implant lesions represent opportunistic infections their therapy must be based on infection control. Under these conditions progression of the disease may be arrested and subsequently, lost peri-implant tissues may be regenerated by surgical procedures. In this context a treatment approach for peri-implant mucositis and peri-implantitis termed Cumulative Interceptive Supportive Therapy (CIST) has been propagated and validated in clinical studies. Under the CIST concept mechanical debridement and antiseptic cleansing will be followed by the application of antibiotics depending on the diagnosis of the peri-implant tissues, specifically absence of presence of bleeding on probing and probing pocket depth will be used to cumulatively add one regime to another if the conditions appear to be worth.

57

Laosrisin, Narongsak
Thailand

Recent progress in the field of periodontology in Thailand

Periodontal research and practice in Asian Pacific countries has made great progress over the past 30 years. In Thailand, there have been a number of advances in periodontal research mostly focus on microbial identification of dental biofilm utilizing molecular techniques, the effect of the biofilm on the host responses, and various regional herbal products in the treatment of periodontal diseases. Unfortunately, these evidence-based reports were not published in the peer-reviewed international journal due to language barrier. This presentation will discuss the activities and administration of The Thailand Periodontology Society, as well as the trends in periodontal treatment and implant dentistry in our country.

58

Leitao, Pedro
Portugal

(look under '**G. Alcoforado**')

59

Lekovic, Vojislav
Serbia

The use of tissue engineering principles in the treatment of intrabony defects

Background: Crucial components of tissue engineering are bioactive signalling molecules, growth factors. It is conceivable that growth factors up-regulates cellular activity and subsequently promotes periodontal regeneration *in vivo*. The growth factors modulate cell proliferation and differentiation in a cell type-specific manner leading to the tissue reparation and regeneration.
Aim: The aim of this study was to evaluate clinical effectiveness and dynamics of active regeneration approach in the treatment of intrabony defects in humans related with utilization of growth factors.
Methods: Forty patients took part in the study. The main enclosure criteria were related with presence of bilateral infrabony defects. According to the clinical protocol, interproximal bony defects were surgically treated with a growth factors and collagen sponge as a carrier. Contra lateral bony defects were treated only with collagen sponge as control. The primary outcomes of the study included changes in probing depth, attachment level, alveolar bone level and defect fill as revealed by re-entry surgeries at 6 months post-treatment. Main characteristics and dynamics of tissue regeneration were revealed using high sophisticated Moritta Accitomo CT scanner. Wanted regions were CT scanned on the base line and 7, 30, 60, 90and 180 days post surgery.
Results: Six months after surgery both treatment modalities resulted in significant probing depth reduction and clinical attachment gain compared to baseline values. Clinical attachment level improvement was 3.45 ± 2.72 mm for the experimental group and 2.70 ± 2.25 mm for the Control group. Re-entry surgeries evaluated bone defect fill for experimental treatment group of 3.58 ± 2.55 mm, in comparison with control group: 2.05 ± 3.33 mm. Differences between clinical results obtained in the two treatment groups showed statistically significance.
Conclusion: Clinical results and outcomes related with evaluation of digital images made by Morita Accitomo CT scanner directly verify positive impact of utilized growth factors on regeneration of periodontal tissues.

60

Lindhe, Jan
Sweden

Changing paradigms in clinical periodontology: epidemiological contributions

Epidemiological research in periodontology is intended to provide information regarding (i) the prevalence and severity of different forms of periodontitis in various populations, (ii) factors that are related to the aetiology of periodontitis (including risk and susceptibility factors) and (iii) the impact of preventive measures. Early epidemiological studies documented that while gingivitis was prevalent in all age groups, destructive periodontitis was rare in young individuals but had a high prevalence in subjects >40 years of age. Scherp (1964) reviewed the available literature and concluded that (i) periodontitis starts as gingivitis in young age, (ii) $>90\%$ of the variance in periodontal disease severity can be explained by the age and the oral hygiene status of the subjects examined. Analysis of data obtained from the 1980s documented that in a given population most subjects above the age of 40 exhibited signs of moderate periodontitis, about 10% remained periodontally healthy, while about 10% had developed severe periodontitis. Cross sectional and longitudinal epidemiological studies performed during the last 10–15 years were aimed at disclosing further why some individuals in a population remained healthy while other developed advanced periodontitis. In such studies factors other than the oral hygiene were included in the examinations; 'tobacco smoking', 'diabetes mellitus', 'osteoporosis' etc. were identified as risk factors. Publications describing the impact of preventive measures on periodontitis on a population basis are few and information whether the prevalence of periodontitis is higher or lower today than it was 50 years ago is inconclusive.

61

Loos, Bruno G
Netherlands

An overview of genetic polymorphism and periodontal status

It is now well accepted that periodontitis is a complex disease. In addition to microbial factors and environmental factors, genetic

factors play an important role. Complex diseases are typically polygenic, i.e. there is genetic variation in multiple genes, each having a small overall contribution and relative risk for the disease process. From the late 1990s a substantial increase in papers on putative genetic risk factors for susceptibility to and severity of periodontitis has appeared in the literature. The current results and implications for some of the investigated candidate genes will be reviewed. Further progress however has to be made; several strategies to identify potential candidate genes for periodontitis are now being employed and these will be discussed. Whatever strategy employed, a multicenter approach is needed. New European initiatives in this area will be presented.

Acknowledgement: Supported by NGFN and the INFOBIOMED network, 6th R&D Framework, EC (IST 2002 507585).

62

Madianos, Phoebus
Greece

Periodontitis: local infection and systemic challenge

Increasing evidence implicates periodontitis, as a potential risk factor for several systemic conditions, including cardiovascular disease, pregnancy complications and diabetes mellitus. Given the recently acquired knowledge that systemic inflammation may contribute to the pathogenesis of atherosclerosis and may predispose to premature birth, research in the field of periodontics has focused on the potential of this chronic low-grade inflammatory condition to contribute to the generation of a systemic inflammatory phenotype. Consistent with this hypothesis clinical studies demonstrate that periodontitis patients have elevated markers of systemic inflammation, such as C-reactive protein (CRP), interleukin 6 (IL-6), haptoglobin and fibrinogen. Patients with acute myocardial infarction (AMI) and periodontitis have higher systemic CRP levels than patients with AMI alone, supporting the notion that periodontal disease is an independent contributor to systemic inflammation. Studies on foetal cord blood from preterm babies indicate a strong IgM antibody response specific to several periodontal pathogens, suggesting foetal exposure to maternal oral organisms *in utero*, which induces an inflammatory response at the foetal-placental unit leading to prematurity. Moreover, new virulence factors for periodontal pathogens have been identified, supporting their role as a likely component of pathogenesis in these systemic complications. The importance of periodontal infections to systemic health is further strengthened by pilot intervention trials indicating that periodontal therapy may reduce systemic inflammatory markers and improve surrogate cardiovascular outcomes, such as endothelial function. Nevertheless, further research is needed to fully dissect the underlying mechanisms by which local chronic infections can impact systemic health and in this endeavour periodontal disease may serve as an ideal disease model.

63

Marsh, Philip
UK

The importance of periodontal microflora: characteristics and clinical relevance of the microbial plaque biofilm

The application of novel molecular, imaging and genomic techniques is radically altering contemporary views on dental plaque. Plaque displays properties that are characteristic of biofilms from other habitats, including an increased tolerance to antimicrobial agents. Cells attach to dental surfaces by specific adhesin-receptor interactions, synthesise a matrix of extracellular polysaccharides, and become spatially organised. The close proximity of cells means that they interact both synergistically and antagonistically, and communicate via small diffusible molecules. Gene expression is altered directly and indirectly by growth in a biofilm. The microbial composition of dental plaque is diverse, but only 50% of the microbes can be cultured. Because the putative pathogens are members of a complex microbial community, the identification of specific virulence determinants is difficult. The existence of virulence clones, the mechanisms by which bacteria persist in spite of elevated immune and inflammatory pressures, and the role of gene acquisition and gene loss on pathogen evolution are being investigated, aided by the publication of several bacterial genomes. Natural active immunisation by therapeutic interventions can raise antibody titres and improve treatment outcomes, while passive immunisation using monoclonal antibodies targeting *P. gingivalis* can prevent colonisation, suggesting that these approaches could be used to modify the subgingival microflora. Organisms associated with disease can also be found in low levels in health, and this fact can be exploited to follow transmission within populations. Evidence of vertical (*Actinobacillus actinomycetemcomitans*) and horizontal transmission (*A. actinomycetemcomitans* and *Porphyromonas gingivalis*) has been obtained, which may provide further novel opportunities for disease control.

64

McGuire, Michael K
USA

Tissue engineered solutions for open interproximal space

Open interproximal spaces, one of the most troubling dilemmas in dentistry can cause aesthetic concerns, phonetic difficulties and food impaction. Except for limited case reports, no one has been able to demonstrate a predictable way to regenerate or to improve deficient papillary form caused by hard or soft tissue loss. This course will review attempts to date to surgically augment deficient papillae and present preliminary results of a novel tissue engineering solution to the open interproximal space.

65

Meredith, Neil
UK

The generation and measurement of optimal implant stability

Implant stability is probably the foundation stone for successful implant treatment. Meredith and Sennerby have defined it as 'Primary stability' at the time of implant placement and 'Secondary stability' the changes attributable to new bone formation and remodelling following placement. High primary stability is of course desirable at placement to resist any applied loads, which may occur in immediate and early loading protocols. Primary stability is dependent on three factors; the local bone quality and quantity, the preparation technique and the implant design. Bone quality and quantity are largely dictated by the optimal implant location. Stability is related to bone density, the stiffness of which may vary by a factor of ten. There is recent work to suggest that short implants placed in areas of high quality but devoid of volume can be very successful. Preparation techniques vary depending on the implant profile, tapered or cylindrical, and local compression techniques using osteotomes. This is a more variable procedure used by skilled clinicians. Local compression of bone to increase density can create an artificially high level of stability and the microdamage caused by fracture may impede the heaing process. Little consideration has been taken in the relation of implant design to primary stability. An exception to this is the mark IV

implant from Nobel which was slightly tapered to create controlled compression in poor bone qualities. Newer implants have been designed to create controlled compression in soft bone but prevent overcompression in dense bone thus creating a universal implant design. This can be contrasted with some of the tapered geometry, root form implants. Implant stability measurement is also a key to understanding the suitability of implants for immediate loading and other protocols. A number of clinicians use an empirical assessment of insertion torque as an assessment of implant stability. This is at best inaccurate and at worst grossly incorrect. Insertion torque is influenced by a number of factors; implant geometry, friction, cutting efficiency, bone quality, bone quantity and drill diameter of which only implant stability is only one parameter. Alternative techniques have been proposed including the 'Periotest', which was designed to measure tooth mobility. Resonance frequency analysis was designed as a non-invasive test method to measure implant stability at every clinical stage. This has become the commercially available Osstell system, which represents the standard technique.

66

Merli, Mauro
Italy

Tissue reconstruction and management in anterior implant aesthetics

Implant supported prosthetic restorations must respond to precise aesthetic and functional requisites, which prove to be more challenging in the anterior region of the maxilla and mandible. The surgical procedure and prosthetic solution are programmed according to the patient's pre-operative situation and final objectives. This involves an assessment of the cause of tooth loss, due to periodontal disease or other factors, and has to take both single tooth and multiple anterior restorations into consideration. Based on a subjective and objective aesthetic analysis, the clinician may consider immediate implant insertion or opt for a delayed approach. Of the several surgical possibilities, it could be desirable to regenerate bone horizontally and/or vertically in a predictable way allowing for more favourable implant placement. Several techniques have been proposed, however the efficacy and efficiency of these techniques have not been firmly established. This presentation will illustrate data recently compiled in a blinded, randomised controlled clinical trial that evaluates the efficacy, the number and severity of complications that occurred in partially edentulous patients treated with autogenous bone grafts and resorbable barriers supported by ostheosynthesis plates versus titanium reinforced barriers for vertical bone augmentation at implant placement. The outcome of this study, as well as the factors examined in this lecture, emphasize the importance of a careful evaluation of the advantages and disadvantages of the chosen therapeutic approach.

67

Meyle, Joerg
Germany

Dental implants in periodontitis

During the last decades dental implants have evolved into one of the most predictable treatment concepts in dentistry. Although there exists today an abundance of different systems and different devices, currently titanium is the material most often used. As previous experiments have demonstrated surface structuring and surface properties are of crucial importance for healing and osseointegration. Although in general osseous ingrowth into the surface structures is no longer a problem, soft tissue adhesion and healing could be improved, as soon as the molecular requirements have been elucidated. Patients suffering from periodontitis often show poor site characteristics, rendering implant therapy more difficult. In the early clinical studies, patients with periodontitis were not included in the statistical evaluation of the success rate. During the last years in some of the studies it has been demonstrated that also in patients with periodontitis implant treatment shows a high success rate, resembling the success seen in patients without the disease. In the presentation an overview will be given on implant therapy in patients with periodontitis including the most recent data available in international peer-reviewed journals.

68

Mir, Pedro
Spain

Supportive therapy for the implant patient

Every day patients are asking for faster and long lasting cosmetic treatments. At the same time the dental implant industry centres its efforts to offer new surfaces and designs to provide immediate loading for the replacement of missing teeth. As a consequence we tend to forget the fact that we are treating individual patients with particular biological responses, driven by the genetics, bacterial load, systemic conditions and environmental risk factors, which affect oral health and treatment response. Furthermore, as periodontitis is the major cause of edentulism in adult patients, the vast majority of our implants are placed in patients affected by periodontitis. Consequently, as all these conditions affect the predictability of the osseointegrated implants, it is essential to include a supportive therapy for the implant patient, in order to obtain a clinical long-term success. Scientific based evidence about the relationship between the microorganism responsible for periodontitis and peri-implantitis, and the peri-implant tissue reaction to plaque accumulation will be discussed. How to organise supportive therapy and management of the risk factors in order to prevent and detect the first signs of disease, will be explained in detail.

69

Mombelli, Andrea
Switzerland

The use of antimicrobials in the therapy of periodontal diseases: benefits, risks and clinical application

In many cases the clinical signs of periodontitis can be ameliorated adequately using mechanical means of treatment only. The benefit of adjunctive systemic antimicrobials in terms of more clinical attachment gain, better reduction of probing depths, and reduced risks for further loss of attachment has been demonstrated for patients with deep pockets, progressive or 'active' disease, or a specific microbiological profile. Long-term stability of treatment results, however, primarily depends upon professional maintenance, a high level of personal oral hygiene and non-smoking. Thus, in the absence of a proper oral hygiene regimen, antibiotics do not protect the patient from recolonization of treated sites. Studies have indicated that certain antimicrobial regimes, particularly the combination of amoxicillin plus metronidazole, are exceptionally efficacious to suppress microorganism that are difficult to suppress with mechanical means alone. Microbiological testing has thus been advocated to identify subjects that harbour these organisms. The arguments to restrict the use of adjunctive systemic antimicrobials are the avoidance of unwanted systemic effects in treated subjects, and the prevention of resistance development in microorganisms in general.

70
Monnet-Corti, Virginie
France

Dealing with the aesthetic demands in periodontics

At present, the increasing interest in aesthetics and the subsequent need to solve related problems consist in a great deal in periodontics. The aesthetic smile depends on healthy periodontium's visibility. However, periodontal treatment can achieve periodontal health without aesthetic result. We can deal with the aesthetic demands in Periodontics by the development of many surgical procedures, associated or not with cosmetic dentistry. Some specific problems such as periodontitis sequellae, gummy smile, gingival line, gingival recession will be reported in diagnosis and treatment terms. It will be also discussed these treatment's predictability. Finally, in order to ameliorate aesthetics in Periodontics and to respond, more accurately, to the patient's demand, it's necessary to develop new future prospect in Periodontology.

71
Needleman, Ian
UK

Importance of evidence based clinical research – how can research help me in clinical periodontal practice?

Evidence-based healthcare will not dictate what you must do. Instead, it is a great tool for illuminating your treatment planning decisions and for engaging with patients. It can help you decide how effective different options might be, indicate their likely predictability and highlight limitations and possible risks. It can be used by anyone and can save a great deal of time in locating useful information. All this is available with a few clicks of the mouse.

72
Newman, Michael G
USA

Information overload in periodontal practice translating the evidence for use at the point of care

Periodontists are valued by how they think as well as by what they know. They must keep current with new technologies and new evidence but the problem is that even 'well-intentioned' dentists can't read all relevant information, and trying to keep up, often feels incompatible with the demands of everyday life. What clinicians are faced with is information overload. There are thousands of dental journals published every year and this is in addition to the explosion of electronically available resources. While getting the information is difficult, evaluating it is even more problematical. To do this in practice, at the point of care, is not easy, but answering clinical questions at the point of care is how we learn and improve clinical results. The ideas and tools found within the Evidence-Based approach provide the clinician an excellent system for quickly determining the usefulness of information. The facts can then be translated into personalized decision-making required by the patient's unique problems. Examples of areas where keeping up with new data is important include: systemic diseases, medications and the potential for drug interactions, effects of systemic conditions and drugs on response to surgery, latest warnings about surgical products, antibiotic resistance, new medications, alternative medicine, oral hygiene products, new implant designs and protocols, tissue reactions to restorative materials, questions asked by the patient, post operative regimens, and more. Suggestions, clinical examples, referral to information resources, and the basic guidance to mange information overload will be presented. Following this lecture the participant should be able to know how to acquire, screen and evaluate information from the datasphere and determine its usefulness in clinical practice.

73
Novak, M. John
USA

Comprehensive non-surgical therapy: effects of controlling plaque and the host response on the need of surgery

Periodontal disease is the result of a complex interaction between the bacteria found in subgingival bacterial plaque and the host response to this bacterial challenge. Overwhelming evidence points to the host response as being the agent responsible for destroying periodontal tissues and the magnitude and/or duration of this response may determine the severity and/or extent of disease. Removal of the bacterial challenge has historically been the method of choice for preventing disease with little attention paid to the host response. With the development of anti-inflammatory agents capable of modulating the periodontal inflammatory response, a clinical approach that treats both the infection and the inflammation would seem appropriate. This presentation will show data from multi-centre studies supporting the benefits of a comprehensive approach to treating periodontal infection, inflammation and disease with specific data showing a significant reduction in the need for surgical intervention to correct periodontal pathology.

74
Ohrn, Kerstin
Sweden

Oral health and quality of life

The research on periodontal disease and periodontal treatment has mostly had a focus possible to measure with traditional clinical outcomes. There are a variety of epidemiological and clinical studies on the prevalence of the disease, its clinical signs, the microbial flora, the inflammation process and the immune response. However, patients' experiences of diseases and treatments have widely been neglected. Within medicine and nursing the concept of health-related quality of life are increasingly incorporated as an outcome measure in many studies. Recent studies in dentistry and dental hygiene have begun to collect patient centred data, labelled as oral-health-related quality of life (OHRQoL). A great number of questionnaires have been constructed, which indicate a growing interest in the field. This presentation will discuss the concept of OHRQoL and its implication for periodontal treatment.

75
Page, Roy C
USA

Risk assessment in the management of periodontal diseases

A major development in Periodontics has been the realization that the host, not the infecting bacteria, plays the dominating role in the pathogenesis of periodontitis and in outcomes. Major risk factors that enhance susceptibility have been identified. Accurate assessment of risk is an essential component of diagnosis and treatment planning. Significant advances have been made recently that permit accurate assessment of risk and quantification of disease severity and extent. This information will be described and discussed and its utilization in diagnosis and treatment planning will be demonstrated.

76
Palmer, Richard
UK

Smoking cessation as important as good plaque control?

Tobacco smoking has widespread systemic effects, many of which may provide mechanisms for the increased susceptibility to periodontitis and the poorer response to treatment. Although smokers may have more severe periodontitis, paradoxically they often appear to have lower signs and symptoms of inflammation. Tobacco smoke contains a large number of noxious agents, which may affect the inflammatory and immune responses. Smoking has a long-term chronic effect impairing the vasculature of the periodontal tissues that can be observed through less gingival redness, lower bleeding on probing, and fewer vessels visible clinically and histologically. The detrimental effects on neutrophil function are well established. Although smoking induces a significant systemic neutrophilia, neutrophil transmigration across the periodontal microvasculature is impeded and resultant induction of protease release within the tissues may be important in disease progression. Tobacco smoke, especially the particulate phase, has also been shown to affect both humoral immunity and cell-mediated immunity. Smoking has a detrimental effect on healing through its affects on the vasculature, revascularisation, the inflammatory response and many aspects of fibroblast function. Therefore, a successful quit smoking strategy in the treatment of periodontitis in a smoker may have a greater impact than plaque control.

77
Papapanou, Panos
USA

Gene expression signatures in periodontitis

A strong genetic basis for the susceptibility to periodontitis, especially for the severe forms of the disease, is widely recognized. Nevertheless, with the exception of certain well-defined systemic conditions that also manifest themselves in the periodontal tissues, the gene(s) conferring this susceptibility have not been conclusively identified. A plethora of studies has focused on the investigation of the role of genetic polymorphisms in this context, primarily in genes coding for inflammatory cytokines. However, the findings are often conflicting. Gene expression profiling is a powerful means of generating comprehensive genome-level data sets and has provided enormous insights in the study of certain diseases, particularly cancer. This presentation will exemplify how this technology can be used to study the pathobiology of periodontitis, with ultimate goals (i) to facilitate a biologically relevant diagnosis and (ii) to identify key features of the disease that are candidates for and amenable to therapeutic interventions. Findings from ongoing studies at Columbia University, New York will be presented and discussed.

78
Persson, Rutger
Switzerland

Periodontitis and cardiovascular diseases: the oral infection and systemic host response hypothesis

Approximately 50% of all cardiovascular disease cases have an unknown aetiology, or cannot be explained by traditional risk factors (i.e. hyper-lipidemia). Since the 1860s a potential infectious aetiology to cardiovascular diseases has been hypothesized. There is abundant evidence derived from epidemiological and cross sectional studies that having periodontitis is characteristic for patients with severe CVD including those with the acute coronary syndrome (ACS). This is true for both men and women. Although the complexity of the infectious patterns in chronic periodontitis (ChrP) is poorly understood several bacteria with an ability to induce strong immune responses have been identified. Cardiovascular changes can be linked to host responses possibly triggered by oral bacteria including both streptococci and gram-negative anaerobes. Although shared risk factors such as obesity, and smoking habits have been advocated as confounders, the oral infection and systemic host inflammatory axis is a well founded biologically based explanatory mechanism also supported by a hypothalamus-pituitary stress related mediator. The objectives of this presentation are to present current explanatory biological links to the ACS-ChrP syndrome.

79
Quirynen, Marc
Belgium

New strategies for non-surgical periodontal therapy

One-week after subgingival debridement a new subgingival microbiota will establish with nearly the initial number of bacteria. Even the pristine pockets around freshly inserted implants are colonized by its final number of bacteria (mature flora) within 2 weeks period. These bacteria originate from both the supra-gingival area (cross-contamination), as well as from the subgingival area (multiplication of remaining species, at least in case of root planed teeth). As clinicians we can interfere with this subgingival re-colonisation at different levels. Via the one-stage, full-mouth disinfection the chance for cross-infection can be reduced. The application of beneficial bacteria (probiotics), a so-called replacement therapy, has been successful in different fields of medicine (gynaecology, gastro-enterology, …). Pilot experiments, *in vitro* as well as *in vivo* have shown promising effects with the application of beneficial species in the pockets after root planning (a concept called guided pocket re-colonisation, GPR). In the Beagle dog, we were able to delay the re-colonisation by pathogens significantly over a longer period of time, even without plaque control. Recently some species have been detected, that kill specific pathogens. Again the periodontal pocket, being easily reachable, offers ideal conditions to use such a concept (misuse bacteria). My presentation will give a general overview on the scientific background of the intra-oral bacterial transmission, as well as of most recent observations with the GPR technique and the applicability of selectively killing species.

80
Ramseier, Cristoph
Switzerland

Smoking cessation counselling

Dental hygienists have a unique role to play in supporting their patients in stopping tobacco use. For tobacco use prevention and cessation efforts to be successful, they should be embedded in the standard care of dental team clinical practice. Professional training and evaluation are needed to ensure that dental personnel have the knowledge and skills required to perform these important tasks. Oral health care professionals are generally aware of their responsibility to advise patients to stop using tobacco. However, they may yet feel inadequately prepared to help their patients quit and consequently not confident enough to provide these preventive measures. Complementing dental and dental hygiene education with tobacco use cessation counselling may result in increased self-confidence and frequency of its provision. The 1st European Workshop on Tobacco Prevention and Cessation for Oral Health Professionals in 2005 concluded that 'professional training should be interdisciplinary, including: (i) biological effects of tobacco use, (ii) tobacco culture and psychosocial aspects of tobacco use,

(iii) prevention and treatment of tobacco use and dependence and (iv) clinical skills training for tobacco use prevention and cessation'. Behaviour change support combined with either nicotine replacement therapy or bupropion are shown to be the most effective interventions for tobacco use cessation in dental settings. Various strategies for prevention of tobacco use and methods for motivating quit attempts in patients are currently being studied. Regardless of approach, the appropriate use of basic communication skills (i.e. with motivational interviewing), appears to be critical to success. In the future, a range of policy, organizational, and educational programmes need to be implemented in dental practice to facilitate the dental professionals' active involvement in prevention and cessation activities. In addition to the public health aspect of tobacco control, such involvement may be both an ethical and a legal responsibility.

81

Renouard, Franck
France

Short or angled implants: indications and limitations

Posterior maxilla presents very often a small amount of bone. Today, several options are available. The most often, bone augmentation procedures are chosen either with a lateral approach or with a crestal one. However, the use of short or tilted implants can provide a simple and efficient way. The success rate of short/tilted implants could be compared with long implant with bone augmentation. However the morbidity is lower. The goal of the lecture is to discuss the limit of the implant treatment using the procedure called 'Graftless Concept'.

82

Roccuzzo, Mario
Italy

Indications and limits of treatment of multiple recession defects with coronally advanced flap

Aesthetics is an inseparable part of today's oral therapy, and several procedures have been proposed to preserve or enhance patients' smile. One of the most frequent indications of perio-plastic surgery is the treatment of buccal gingival recessions. The evidence for isolated root coverage has been investigated and already presented. Data from the literature, however, cannot be taken into consideration when multiple recessions are present and the surgical approach should be different. A modified coronally advanced flap (mCAF) was recently described by Zucchelli & De Sanctis (2000) to successfully treat several adjacent defects. Even though this technique cannot be considered statistically superior to the others, mCAF is clinically highly effective in recession reduction with limited drawbacks. Attention will be devoted to illustrate factors most associated with successful outcomes, and illustrated in the video session. Several cases will be presented to exemplify when the procedure is indicated and when not.

83

Rompen, Eric
Belgium

Challenges in the management of the extraction socket: the treatment concept from liège

Choosing the most effective method to manage single or multiple extraction sockets in the aesthetic zone is a critical issue, since it has been shown that some recession of the buccal gingiva is difficult to predictably avoid. A careful assessment of the risk factors will guide the clinician towards either an immediate or a delayed implant placement, and determine if soft or hard tissue augmentation should be performed prior to or at implant placement. In demanding situations such as immediate implant placement, it is of major importance to control the parameters that can improve the biological interface between soft tissues and implant components and help stabilizing the gingival level: biocompatibility and design of the transmucosal components, reduction of marginal bone remodelling through less aggressive surgery and appropriate implant design and positioning, gentle prosthetic techniques to avoid injuring the biological interface, … Clinical examples will evidence that innovative approaches can increase the predictability of immediate implants in the aesthetic area. The biological processes happening after tooth extraction lead to a remodelling of the buccal bony plate. Techniques allowing preventing or correcting the effects of this remodelling after immediate implant placement will be presented. If a delayed approach is chosen, a collapse of the socket must be avoided. This can be effectively performed by means of connective tissue grafts covering the socket and thickening the buccal biotype in the same time. The rationale to decide whether or not these grafts should be combined with filling biomaterials and/or autologous bone grafts will be detailed, which clinical examples and histological illustrations.

84

Salvi, Giovanni
Switzerland

Periodontal risk assessment (PRA) and planning of supportive therapy

The patient-based risk assessment is aimed at estimating the risk for susceptibility for progression of periodontal disease. It consists of an assessment of six parameters: level of full-mouth residual inflammation (e.g. bleeding on probing), prevalence of residual periodontal pockets ≥5 mm, the number of lost teeth, an estimate of periodontal bone loss in relation to the patient's age, an evaluation of the systemic and genetic conditions and an assessment of environmental factors such as cigarette smoking. All these parameters should be evaluated together and yield a comprehensive picture of the patient helping the clinicians (e.g. dentist and dental hygienist) in determining the risk for future disease progression. Moreover, the periodontal risk assessment may prove useful in customizing the frequency and content of supportive periodontal therapy (SPT).

85

Schwarz, Frank
Germany

Laser treatment in periodontal therapy

In recent years, the use of laser radiation has also been expected to serve as an alternative or adjunctive treatment to conventional periodontal therapy. Various hypothetical advantageous characteristics, such as haemostatic effects, improved calculus removal and bactericidal effects against periodontopathic pathogens might lead to improved treatment outcomes. Close attention has been paid to the clinical applicability of the Er:YAG laser with a wavelength of 2.940 nm in the near infrared spectrum. This laser system provides a capability to effectively remove calculus and bacterial lipopolysaccharides from periodontally diseased root surfaces without producing major thermal side effects to adjacent tissues. Controlled clinical trials have also demonstrated that non-surgical as well as surgical periodontal treatment with an Er:YAG laser resulted in significant clinical attachment levels gains comparable to treatment with hand or ultrasonic instruments. The aim of the present lecture is to evaluate, based on the currently available evidence, laser treatment in periodontal therapy.

86
Sculean, Anton
Netherlands

Treatment of intrabony defects with graft biomaterials alone or in combination with other reconstructive techniques

The aim of the lecture is to present a critical overview, based on the available evidence from human histological and controlled clinical studies, on the use of various types of bone grafts/bone substitutes alone or in combination with enamel matrix proteins, growth factors or GTR in regenerative periodontal treatment of intrabony defects. Special emphasis will be given to the appropriate indication, contraindication, clinical and biological advantages for using these materials. Technical and surgical recommendations will be given and illustrated on video presentation.

87
Sicilia, Alberto
Spain

A microsurgical/minimally invasive approach to smile reconstruction with reparative and implant surgery

During the last 15 years our profession has been witnessing the expansion of magnification systems. At an early stage, its application seemed to focus on diagnosis and periapical surgery, but in the mid 90s, several groups of professionals specialized in other dentistry fields carried out studies on other applications and spread its use. As for periodontal and implantological surgery, we are borrowing the concept of Minimally Invasive Surgery (MIS) from other medical fields, as it has great implications on our discipline. MIS is a complex concept that should be reviewed. MIS involves smaller and more accurate incisions, using magnification systems and microsurgery instruments. But MIS also requires fewer operations, which implies a very precise planning and a combination of surgical techniques aiming at several objectives simultaneously, or even at flapless surgery. Regarding these two last aspects, the role of diagnosis technology and computer aided surgery is a very relevant one. Therefore, magnification technology – mainly the use of microscope – and state-of-the-art computer technology will work together to provide more precise treatments and offer patients a less invasive experience. In the presentation, we will broadcast complex clinical cases to illustrate the working methods applied in microscope aided dental surgery with the support of virtual surgery techniques and specialized software.

88
Simion, Massimo
Italy

Vertical ridge augmentation: is it an alternative to sinus lifting?

In the last few years, vertical ridge augmentation and sinus elevation techniques have been shown to be effective for the placement of endosteal implants in severely resorbed maxillae. These surgical procedures have enormously expanded the possibility to successfully handle compromised patients with localized bone deficiencies of the upper jaw. Both of these surgical procedures have precise clinical directions and, on the other side, limitations to their use. The treatment planning depends on the anatomical features of the area to be treated: some situations must be overcome with a sinus lifting, some others require a vertical augmentation. However, when the posterior jaw atrophy is severe the combination of the two techniques is needed. The lecture will consider all these different clinical situations, and will propose some guidelines to make a decision in the rehabilitation of the posterior upper jaw with osteointegrated implants and regenerative procedures. The final goal is to provide the clinician with more solutions to manage complex situations and the patient with more opportunities for an implant supported fixed prosthetic rehabilitation.

89
Surathu, Nitish
India

Epidemiology of periodontal disease and evolution of indigenous treatment strategies in the Indian subcontinent

The incidence and prevalence of periodontal disease in the Indian subcontinent is one of the highest in the world. Undoubtedly, this is related to the socieconomic conditions of the region, limited awareness and inaccessibility to effective treatment. While urban rates and treatment methods are largely reflective of similar situations that exist in any part of the developed world, the same is not true of the larger percentage of the geography or population of the region. In as much as the figures are unique, it also follows that effective treatment and prevention strategies must also be evolved that are also unique and situation specific. This presentation will focus on available data on the incidence and prevalence of periodontal disease in the region and draw possible lines of aetiology and pathogenesis that relate to factors that are unique to this part of the world. An attempt will also be made to present indigenous methods that seem to hold a promise of efficacy and also evolve strategy that could possibly define a future course of action.

90
Suvan, Jean E
UK

Evidence based practice in dental hygiene

'Evidence Based' is one of the most common expressions found recently throughout various healthcare publications with dental literature no exception. What does it all mean to dental hygiene? Evidence Based Practice is more than 'what we have been doing for years'. It is more that randomised controlled trials, or a cookbook approach to practice. It is a paradigm shift. It is a philosophy, a skill, and a set of tools to improve patient centred care. It has emerged in response to a need. It is vital to dental hygienists to enhance patient management and clinical decision-making. This presentation will highlight the meaning, relevance, and practical applications of an evidence based approach, drawing from examples of current evidence relevant to dental hygiene practice.

91
Tawil, Georges
Libanon

Implant therapy in the diabetic patient. Clinical results. Cuture directions

Diabetes affects millions of people worldwide and its prevalence has risen dramatically in the past two decades. Because of the established link between oral infections, exaggerated host responses, alveolar destruction, impaired healing and diabetes, diabetic patients never truly benefited from implant therapy. The purpose of this presentation is to determine the importance of diabetes as a risk factor for implant therapy based on the literature and to present the therapeutic outcomes of conventional and advanced implant treatment in diabetics compared to a group of systemically healthy matched controls. Forty-five patients with type II diabetes and a mean diabetes duration of 12.7 years were

treated for various forms of edentulism. Eighty-seven surgeries were performed and 254 implants placed Conventional implant treatment as well as advanced implant therapy consisting of sinus floor elevation, immediate loading and GBR were done.45 systemically healthy patients operated under the same conditions and matched first for the surgical indication and where possible for age, sex, and additional risk factors served as controls. Sixty-five surgeries were done in this group and 245 implants placed. Diabetic patients were further characterized using FPG, HbA1c, duration of the disease, systolic pressure, dyslipidemia, diabetes chronic complications and medications used in diabetic control. Smoking BOP, PD and peri-implant bone loss were recorded for all patients. The variables were tested for their effect on implant survival, peri-implant bone loss and postoperative complications in conventional and advanced therapy. Contingency tables were used to analyse the data. Multivariate logistic regression was done to analyse the effect of the baseline covariates on the results. Survival rate was 97.2% for the diabetic group vs. 98.8% for the systemically healthy controls. The results showed that diabetics with HbA1c values ranging from 7–9%, strictly controlled during the perioperative period, maintained and followed for a period up to 12 years (mean 4 years), have an implant survival rate for conventional as well as advanced therapy equal to systemically healthy patients. Further research is needed to evaluate the effect of more severe diabetic fluctuations on the long-term survival and complication rate of implant therapy.

92

Testori, Tiziano
Italy

Vertical ridge augmentation: is it an alternative to sinus lifting?

In the last few years, vertical ridge augmentation and sinus elevation techniques have been shown to be effective for the placement of endosteal implants in severely resorbed maxillae. These surgical procedures have enormously expanded the possibility to successfully handle compromised patients with localized bone deficiencies of the upper jaw. Both of these surgical procedures have precise clinical directions and, on the other side, limitations to their use. The treatment planning depends on the anatomical features of the area to be treated: some situations must be overcome with a sinus lifting, some others require a vertical augmentation. However, when the posterior jaw atrophy is severe the combination of the two techniques is needed. The lecture will consider all these different clinical situations, and will propose some guidelines to make a decision in the rehabilitation of the posterior upper jaw with osteointegrated implants and regenerative procedures. The final goal is to provide the clinician with more solutions to manage complex situations and the patient with more opportunities for an implant supported fixed prosthetic rehabilitation.

93

Tonetti, Maurizio
Italy

Periodontal therapy vs. implants positioning

There is a growing sense among practicing clinicians that the prognosis of complex periodontal therapy may not match the high levels of predictability of implants. As a consequence more teeth are extracted and replaced with implants in periodontal patients. This approach is based on two important assumptions: (i) implants perform better than compromised teeth in periodontal patients and (ii) implant longevity is independent of the individual susceptibility profile that has compromised the dentition of the specific patient. This presentation will carefully assess the available scientific evidence that supports or refute these two basic assumptions and will attempt to provide a balanced perspective between the advantages and disadvantages of complex periodontal therapy and implant replacement.

94

Trombelli, Leonardo
Italy

Reconstructive potential of autogenous cortical bone in periodontal intrabony defects

The presentation will focus on the use of the autogenous cortical bone particulate (ACBP) for the treatment of deep intraosseous defects. The clinical and histological advantages with respect to the standard access flap approach will be discussed. A new method for treating the most challenging intraosseous lesions based on the combined use of ACBP and Enamel Matrix Derivative (EMD) will be described in details (video). Finally, the indications for the additional use of ACBP to EMD will be provided based on the results from a randomised clinical trial comparing the combined approach with EMD treatment alone.

95

Valentini, Pascal
France

Sinus lifting procedures: long-term with xenografts

The aim of the present lecture was to evaluate the implant survival rate of cylindrical and screw type implants placed in grafted sinuses with bovine anorganic bone. The patients included in this study have been treated with a 1 or 2 stage technique, according to the volume of residual bone, which determines the possibility of primary stabilisation and, in turn, the duration of the treatment, which is 9 or 12 months, respectively. The overall implant survival rate was 90.1% after a mean functioning period of 10 years. Late failures, attributable to chronic bacterial infection (peri-implantitis), were observed only on cylinders. This material appears as a suitable material for sinus floor augmentation.

96

van der Velden, Ubele
Netherlands

Strategies on prevention of periodontal diseases: importance of diagnosis and home care

In the past, numerous cross-sectional epidemiological studies have been carried out all over the world showing the relationship between the amount of supra-gingival plaque and the level periodontal diseases: the more plaque the more inflammation and periodontal destruction. This concept has led to the classic experimental gingivitis studies by Löe and co-workers showing that dental plaque is the cause of gingivitis. Based on these findings it is a widely accepted concept that plaque is also the cause of periodontitis. However, longitudinal prospective studies tend to fail to support this concept. Therefore, for the prevention of periodontal diseases the presence and amount of supragingival plaque cannot be used. The value of other parameters will be discussed. Since presence of plaque does not adequately predict the onset of periodontitis, evaluation of home care measures cannot exclusively be based on the assessment of the amount of plaque during routine check-ups. Such an evaluation should be based on risk factors for the onset of periodontitis on a subject basis as substantiated in longitudinal studies. For secondary prevention, risk predictors for progression of periodontitis may be used.

97

van Steenberghe, Daniel
Belgium

Definitions and critical assessment of immediate/early loading of oral implants: fashion vs. scientific data

Since more than a decade there is steeply increasing flow of clinical reports on early and immediate loading of oral implants. Often one-stage is confused with immediate loading and although the title of some papers do mention the term 'immediate' the contents reveal loading did not take place after one several days and thus the term 'early' rather applies. Besides this problem of proper definition, comes the issue of what data are already available in literature and what their validity is. Evidently one cannot expect the same type of quality of reports as for the classical osseointegration protocol with 20 years follow-up data. Furthermore, once osseointegration is established one can expect that it will remain so independent of the timing of initial loading. This presentation will critically assess for which type of rehabilitation, which data are available and distinguish between commercial rhetoric and sound scientific evidence.

98

van Winkelhoff, Arian J
Netherlands

Antimicrobial treatment strategies in periodontally susceptible patients with implants

Peri-implants infections involve mucositis and peri-implantitis. Both conditions are caused plaque bacteria. Smoking seems to be a significant risk factor. While mucositis is treatable by local mechanical therapy only, peri-implantitis is most often not. One major difficulty in the peri-implantitis lesions is the nature of the implant surface, which is not designed for optimal mechanical treatment. Although a uniform and predictable treatment protocol is lacking, there seems consensus that surgical exposure of the lesion, mechanical cleaning, local antiseptic measures followed by systemic antibiotics are necessary to control the infection and halt further progression of alveolar bone loss. The optimal systemic antimicrobial therapy has to be determined. The peri-implantitis microflora can vary considerably and may include oral anaerobic pathogens, but also staphylococci, enterics, beta-haemolytic streptococci and yeast have been isolated from implant lesions. Based on these observations, microbiological examination and antibiotic susceptibility testing may be the base for a rational use of antibiotics in the treatment of peri-implantitis. Since the risk of developing peri-implantitis is probably higher in patients with a history of periodontitis, periodontal examination and control of the periodontal microflora before implants are installed seems a rational approach to prevent peri-implantitis to develop. Further improvement of the treatment of peri-implantitis is necessary and can only be achieved in controlled clinical trials.

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Watchel, Hannes
Germany

Soft tissue management to improve aesthetics

The success of implants can no longer be judged whether or not they are osseointegrated; it is rather a question of whether implant supported restorations is in harmony with the gingival architecture. Failures of treatment strategy may cause poor aesthetic results. Therefore the patient and the dentist are faced with tremendous consequences since the implants are osseointegrated. A yet unsolved issue in implant aesthetics remains augmentation and the creation of a stable aesthetic framework in the previously compromised site. The augmentation includes two separate components: the development of the hard tissue and the reconstruction of the soft tissue. The high expectations towards bone grafts in particular bone blocks for bone augmentation had been questioned. Recent scientific evidence reveals high resorption rates over a long lasting period of tissue maturation. Soft tissue augmentation seems to be more stable after the initial resorption phase; however soft tissue stability is depending upon underlying hard tissue fundament. The presentation will focus on clinical solutions to preserve and reconstruct the three-dimensional architecture in implant sites.

100

Wennerberg, Ann
Sweden

Critical evaluation of different implant surfaces

Implant surfaces have gained a huge interest, not the least from commercial companies, during the last 15 years. In the 1970s and 1980s turned minimally rough surfaces was the gold standard, a surface which still is the most clinically documented one. Titanium or hydroxy apatite plasma sprayed, rough surfaces became common during the latter part of the 1980s. However, studies performed at our laboratories demonstrated that the strongest bone response was seen to moderately rough surfaces that from a topographical point of view were between turned and plasma sprayed implants; i.e. with Sa of 1–2 μm, today characteristics of the great majority of oral implant systems, either they are machined with etching, blasting or oxidization techniques. Although the moderately rough surfaces are superior in experimental studies, clinical studies comparing different surfaces generally report no significant differences between minimally and moderately roughened implants, even if there is a general tendency towards better results for the moderately roughened implants. An exception seems to be if moderately rough surfaces are used in an immediate loading protocol or in relation with bone reconstruction. In these situations, several clinical studies report significant better results with the moderately rough surfaces. Our current research is focussed on the potentials of roughness at the nanometre level of resolution and on bioactive implant surfaces. Despite some positive indications from *in vitro* studies, our knowledge of the importance of nanometre sized irregularities remains insufficiently investigated in the *in vivo* situation. So-called bioactivity, i.e. the potential of a surface to establish interfacial chemical bonding, is likewise poorly investigated in the *in vivo* situation.

101

Wennström, Jan
Sweden

Non-surgical periodontal therapy: mechanical infection control – alternative approaches

The main goal in the treatment of patients with periodontitis is to establish and maintain adequate infection control in the dentogingival area. Pocket/root instrumentation (scaling and root planning, SRP) combined with effective self-performed supragingival plaque control measures serve as basic means to achieve this goal. As an initial approach SRP was traditionally performed by jaw quadrant at a series of appointments. More recently, the benefit of

performing the mechanical instrumentation as full-mouth SRP within 24 h or even as a single session of full-mouth ultrasonic debridement has been advocated. In terms of selection of instruments, systematic reviews reveal no major difference in the efficacy of debridement techniques using hand or power-driven instruments. The presentation will review the evidence for various approaches to professionally performed mechanical infection control as a base for treatment decisions.

102

Wikesjo, Ulf
USA

Bone morphogenetic proteins, alveolar augmentation and development of a bone inductive dental implant: tissue engineering in the 21st century

Surgical placement of oral implants is governed by the prosthetic design and by the morphology and quality of the alveolar bone. Often, implant placement appears difficult, if at all possible, due to alveolar ridge aberrations. In consequence, prosthetically dictated implant positioning commonly entails bone augmentation procedures. One objective of our Laboratory for Applied Periodontal & Craniofacial Regeneration is to evaluate the biologic potential of bone morphogenetic proteins (BMPs), other candidate biologics, bone biomaterials, and devices for alveolar ridge augmentation and implant fixation using discriminating preclinical models including clinically relevant supra-alveolar peri-implant defects, peri-implantitis defects, and the maxillary sinus. This presentation will discuss the unique biologic potential, the clinical relevance and perspectives of recent and unpublished observations of BMP technologies for alveolar bone augmentation and oral implant fixation. In particular the development of a unique bone-inductive oral implant combining a purpose-designed implant surface (TiUnite^{TM}) and rhBMP-2 will be discussed. This presentation will also address merits and explain shortcomings of current treatment protocol including bone biomaterials and guided bone regeneration (GBR). Our studies suggest that BMPs have an unparalleled potential to augment alveolar bone and support implant osseointegration and long-term functional loading. Inclusion of BMPs for alveolar augmentation and osseointegration will not only enhance predictability of existing clinical protocol but also radically change current treatment paradigms. Inclusion of the bone-inductive oral implant in the treatment panorama may make 'grafting' and GBR procedures altogether obsolete.

103

Williams, Ray C
USA

Host modulation in the management of periodontal disease: a journey to discovery

With a clearer understanding of the role of the host in the pathogenesis of gingivitis, periodontitis and peri-implant disease, there has logically followed much interest in how specific destructive host responses may be modulated as a way of treating disease. Considerable evidence indicates that the modulation or blocking of certain inflammatory mediators and enzymes with pharmacological agents can inhibit gingivitis and slow the progression of periodontal disease. But likely, we have only scratched the surface in host modulation. This presentation will briefly review the development of host modulation as a treatment strategy. This presentation will then look at new and developing strategies in host modulation for the management of a very common disease.

104

Wimmer, Gernot
Austria

How does coping with stress affect the periodontal disease progression and treatment results?

Periodontal infections are caused by specific local pathogenic microorganisms. The type and severity of the disease are determined by the patient's individual susceptibility to infection. Such susceptibility is influenced by various congenital, inherent and acquired host conditions or by risk factors that act upon the organism's ability to resist bacterial invasion. Psychosocial Factors and stress also appear to affect the development of periodontitis. This presentation describes stress and its potential effects on health, particularly in connection with periodontal diseases. Hereby, individual stress coping strategies appear to be of special importance for the development of disease. Own investigations aimed at more profound analysis of such coping strategies revealed that different coping approaches exerted distinct influences on disease severity as well as therapy. It was shown that passive coping strategies were more pronounced in advanced disease as well as cases of poorer response to a non-surgical periodontal treatment, whereas patients with active coping modes had milder disease and a more favourable course of treatment. Thus, maladaptive behaviour, especially in association with behaviour-related risk factors such as smoking, are of great importance in the medical history, treatment, and maintenance of patients with periodontal disease. These seemingly at least partly adverse influences of individually different coping strategies were also found among the large collectives of a population-based study. Results of these studies will be presented in detail and potential implications for future treatment of periodontal diseases will be discussed.

105

Winkel, Edwin G
Netherlands

Diagnosis of oral malodour – 'How to distinguish between intra- and extra-oral halitosis'

To recognize people in daily life with bad breath is not a problem. However, in your dental office many patients try to mask their bad breath with cosmetic products just before entering the room. Behind your mask, you, the therapist have no idea about the bad breath problems of the patient. This is one of the reasons you should ask in your medical and dental list of questions about bad breath (halitosis) and bad taste. Checking the tongue of each patient is also a way to recognize a possible halitosis patient. Once a patient knows that you are knowledgeable about halitosis he/she will ask you to treat him/her. For appropriate therapy, you need a proper diagnosis. Several non-oral pathological conditions have been related to halitosis, including infection of the upper and lower respiratory tract, the gastrointestinal tract, and some metabolic diseases involving the kidneys or the liver. To distinguish between patients with intra-oral halitosis or extra-oral halitosis is not easy. However, in our research group we have developed a system based on the level of certain Volatile Sulphur Compounds (VSC) on how to distinguish between intra- and extra-oral halitosis. We showed that concentrations of H_2S and methylmercaptane (MM, CH_3SH) in the breath of the mouths of patients with extra-oral halitosis are very low and below critical odorous levels. However, the concentration of dimethylsulfide (DMS, CH_3SCH_3) in mouth- and nose-breath in extra-oral halitosis patients is elevated. In this lecture subjective and objective diagnostic tools will be discussed to make a clear

differentiation between patients who can be treated in your dental practice or need to be referred because the source of the malodour is non-dentally related.

106

Yamamoto, M
Japan

Aspect of regenerative dentistry in Japan

Recently, great efforts are made to develop regenerative dentistry using autologous stem cell or periodontal ligament cell with appropriate carriers. A few growth factors, other than BMP-2 or OP-1, have been tried to confirm biological benefits *in vitro* and *in vivo* system, too. These regenerative strategies are based on exploitative system including *ex vivo* tissue engineering and high-tech biomaterials. In this session, two of excellent regenerative technologies are presented, cell sheet engineering in periodontal ligament tissue and suitable recombinant scaffold in combination with GDF-5 for bone augmentation. Both techniques are aimed not only to stimulate cellular growth and/or differentiation but also to promote tissue healing or regeneration with advanced application of cellular source to periodontal lesion. These results are analysed *in vitro* and *in vivo*. The possibility of clinical application is also discussed with reference to Japanese regulations.

107

Yuniarti, SS
Indonesia

Recent progress in the field of periodontology in Indonesia

The House Hold Health Survey conducted by the Department of Health in the year 2001, showed that the prevalence of oral diseases occupied the highest rank (60%). Compared to other general diseases, such as respiratory infections (24%). The survey also showed that the prevalence of oral diseases increased with age and the highest point was 91% for the highest age group. Recently, the Department of Health has formulated a new paradigm 'Indonesia Healthy by the year 2010' that emphasizes health rather than diseases and preventive care rather than curative care. Unfortunately this approach has not yet been optimally socialized to dental health personnel, including dentists. This paper presents informations of the progress in the field of Periodontology in Indonesia, which consists of the management of periodontal diseases and research of periodontology in Indonesia. According to the data from September 2004–September 2005 at the Periodontal Clinic Dental Hospital University of Indonesia there were 2532 periodontal cases consist of 78.83% gingivitis, 21.17% periodontitis included Aggressive Periodontitis. Almost 50–70% of periodontal patients refused to be treated, since their dental awareness is very low and also due to their economic condition. General dentists and periodontists at goverment public hospitals or clinics, private clinic, and dental hospital of Faculty of Dentistry have managed the treatment of periodontal diseases in Indonesia. Although the prevalence of periodontal diseases is high, the demand of periodontal treatment still very low, but there are increasing of awareness of the community for scaling. Nowadays researches in the field periodontology have more developed compared to the last two decade, and mostly have been carried out at the Faculty Dentistry by the academic staff, undergraduate and post graduate students, Doctorate/PhD Candidates.

108

Zabalegui, Ion
Spain

Treatment of multiple adjacent gingival recessions with tunnel subepithelial CT grafts

Gingival recessions are one of the most common aesthetic complaints on the periodontal environment. Most of the occasions, these recessions occur in several adjacent teeth involved in the patient's smile. Several therapeutic approaches have been developed in the last three decades for the treatment of this situation. Among all, connective tissue subepithelial graft is one of the most popular treatment modalities since it has shown a high degree of outcome satisfaction for both dentists and patients. On the other hand, the introduction of magnification lenses and microscopic tools into the surgical armamentarium have allowed dentistry to apply minimally invasive surgical procedures which provide less discomfort and earlier results to the patient. The purpose of this video presentation is to describe and show a connective subepithelial tissue graft for the treatment of multiple adjacent gingival recessions with minimally invasive procedures as well as its short and long-term results.

109

Zucchelli, Giovanni
Italy

Soft tissue surgery to improve the smile

Successful aesthetic and clinical (root coverage and increase in keratinized tissue height) results can be obtained with the coronally advanced flap for multiple recession defects and these outcomes can be well maintained over a 4-year observation period. Negative patient characteristics such as lack of compliance with a supportive care program, and individual susceptibility to gingival recession are significantly associated with the recurrence in gingival recession. The increase in keratinized tissue height, which follows the coronally advanced flap procedure, may be attributed to the tendency of mucogingival line to regain its genetically determined position.

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