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25th Euro Dentistry Congress

September 20-21, 2017 Dublin, Ireland

Keynote Forum

Day 1

25th Euro Dentistry Congress

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Yasemin Kulak Ozkan

University of Marmara, Turkey

In vivo evaluation of the internal and marginal adaptation and clinical success of different full ceramic crowns generated with CAD/CAM technology

Aim: The aim of this clinical study were to compare the marginal and internal adaptation of all-ceramic crowns generated with CAD/CAM before cementation and examine the clinical outcomes at baseline and sixth month after luting.

Materials & Methods: A total of 45 crowns were placed in 38 patients, including 15 lithium disilicate ceramic crowns (LDS, IPS e.max CAD Blocks, Ivoclar, Vivadent, Schaan, Liechtenstein), 30 lithium disilicate stengthened lithium aluminosilicate glass-ceramic crowns. The marginal and internal gaps of crowns were recorded by using a replica technique. The replica specimens were sectioned bucco-lingually and mesio-distally and the thickness of silicone layers was examined by computerized light microscope at × 40 magnification. Twenty reference points per tooth were measured, and mean marginal and internal gaps were recorded. Restorations were clinically assessed at baseline and six months after cementation by using modified USPHS criteria, plaque and gingival indexes and patients satisfaction criteria. Data was analysed by using Mann-Whitney and Wilcoxon Signed Rank tests ($P<0.05$).

Results: After six month observation period, total survival rates of LDS and LAS groups were 100%. There were no clinically identified cases of crown fracture or surface chipping. The mean marginal gaps were 53.2963 (± 11.2691) µm for LDS group and 51. 6703 (±11.2381) µm for LAS group. The highest gap value was observed at the occlusal area and lowest one at the marginal area ($P<0.05$). There was no significant difference in relation to material difference.

Conclusions: Regarding all of the clinical evaluation criteria all 45 crowns exhibited clinically acceptable scores within an average evaluation time of six months. Early results indicate that LAS crowns may be an effective option for all-ceramic restorations.

Biography

Yasemin Kulak Ozkan has completed her Graduation at Marmara University, in 1987. She became a Research Assistant in the Faculty of Dentistry, Department of Prosthodontics in the same year. She became an Associate Profesor in 1996; Professor in 2001 and; Vice Dean in 2004-2007. She was elected as a President of TPID (Turkish Prostodontics and Implantology Association) in 2016. Since 2014, she has been serving as the Dean of University of Marmara, Faculty of Dentistry and the Head of the Department of Prosthesis. She has published more than 60 papers in reputed journals and has been serving as an Editorial Board Member of reputed journals.

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Dirk Neefs

Vrije Universiteit Brussel, Belgium

Tempocopy, a protocol to achieve complete oral rehabilitations copying the provisional prosthesis by means of CAD/CAM

Introduction: A method to achieve complete oral rehabilitation with predictable success. Applicable to oral rehabilitations with fixed prosthesis on teeth and/or implants. We use the fixed provisional restorations to determine the centric occlusion and dental morphology for an optimal functional outcome on a periodontal, phonetic and aesthetic level.

Materials & Methods: We prepare every case of rehabilitation in classical way, using die cast models, diagnostic wax up, CBCT scan, surgical guide and a thermoplastic mold of our wax up in order to achieve provisional methacrylate crowns made intra orally. In order to deprogram the masticatory muscles and finding the centric occlusion a lucia jig is then incorporated in the provisional crowns. After a minimal time of ten minutes the centric position is located. Adding methacrylate posterior occlusal stability and lateral guidance is optimized. Esthetic and phonetic adaptations are made. If there are neither subjective nor objective problems the next weeks of follow up, we scan our provisional bridge. This virtual bridge then will be positioned on the virtual model and all the parameters controlled. Finally the technician makes the reduction on the virtual structure for later ceramic covering and this design is send to the Zirconia milling machine

Results: Achieving the occlusion in centric relation, re-establishing the TMJ in its physiological position makes us realize full arch rehabilitations with a very good long term prognosis.

Conclusion: The tempocopy protocol allows us to work with much more predictability in aspects of occlusion, periodontics, phonetics and aesthetics.

Biography

Dirk Neefs graduated as a Dentist in 1987 at Brussels University and has specialization in Oral Rehabilitations with dental implants at Liege University in 1992. He has his dental office in Antwerp, Belgium and Oviedo and Gijon, Spain. He has presented lectures in Belgium, France and Spain.

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Edda Tobiasch

Bonn-Rhine-Sieg University of Applied Sciences, Germany

Ectomesenchymal stem cell and artificial ligands for purinergic receptors loaded biomaterials for dental applications

For successful and long-time implant anchorage, a sufficient vertical and transversal bone level is necessary. Several cell types are under investigation for reconstruction of the jaw bone for implant anchorage. Next to mesenchymal stem cells from various sources such as adipose tissue, dental follicle cells and bone particles, both of ectomesenchymal origin are of major interest for non-vascularized bone autografts. Such bone particles are produced during the implant-bed preparation or created by bone ablation with surgical round-drills and can be collected with a bone filter integrated into surgical suction pipe. They are thus, as a side product during surgery available without any additional invasive procedures. Here we show that ectomesenchymal stem cells compared to mesenchymal stem cells are pre-committed towards hard tissues. As ionotrophic P2X and metabotrophic purinergic (P) 2 receptors express a distinct pattern during the development of a tooth in various tissues of the follicle, we investigated the effect of artificial ligands of these receptors on the differentiation process. The administration of the selective P2X7 antagonist A740003 led to an enhanced matrix mineralization, confirming the functional role of P2X7 during late osteogenesis. Interestingly this effect can be focused into collagen scaffold material via drop-on and drop-in only, when based into a petri dish. This mineralization enhancement is correlated to specific chemical scaffold-medium-interactions. Taken together, the use of ectomesenchymal stem cell together with an antagonist for the P2X7 receptor can improve in vitro osteogenesis. This effect can be further enhanced and localized into a collagen sponge. Such a functionalized scaffold might be applied in regenerative dentistry for optimized osseointegration of dental implants.

Biography

Edda Tobiasch is a Molecular Biologist, graduated from Biology department at Technical University Kaiserslautern, Germany. She worked as Post-Doctorate on signal transduction pathways at the German Cancer Research Center (DKFZ) in Heidelberg. She worked as an Instructor at Harvard Medical School, Boston, USA and is now Professor of the Department of Natural Sciences, Bonn-Rhine-Sieg University of Applied Sciences. She was awarded for Outstanding Scientific Research at the DKFZ in 1993.

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Yılmaz Umut Aslan

University of Marmara, Turkey

Computer guided novel approach in treatment of Edentulous patients with immediate loaded implants

Depending on the developments in computer technologies, implant surgery techniques have several improvements during the last years. With the development of these techniques nowadays, it is expected that edentulous patients will have both implants and prostheses on the same day. Since it is very important for a patient to have teeth in a day, flapless surgical technique with computer guided procedure is chosen for the immediate loading of implants. Advancements in three-dimensional (3D) imaging technology have helped to us allowing better visualization of the soft and hard tissues. This improvement facilitates implant treatment planning related to anatomical and prosthetic conditions, leading to a more predictable outcome. Currently, 3D planning software programs are available to transfer the information from a digital 3D planning environment to the intraoperative surgical field by means of computer aided or guided surgery. Using computer guided protocol, it is a successful treatment option for edentulous patients who demand teeth on the same day. So the best way to obtain this is to use computer and scanning techonologies. Thats how patients has the immediate smile wtih minimum pain. Computer guided implants can be a successful treatment alternative for immediate loaded implants in edentulous patients. The patients were satisfied with the treatment outcome. This modern approach has many advantages like patient satisfaction, soft tissue management and precision of implant locations. The purpose of this presentation is to demonstrate how to use computer guided novel approach in treatment of edentulous patients.

Biography

Yılmaz Umut Aslan has completed his Graduation at Marmara University, Faculty of Dentisty in 2006. He became Research Assistant in the Faculty of Dentistry Department of Prosthodontics in the same year; Associate Profesor in 2014 and; Vice Dean in 2016. He currently works as Vice Dean and Teacher of Prosthodontic department at Marmara University, Faculty of Dentistry, Department of Prosthodontics.

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Margit Schulze

Bonn-Rhein-Sieg University of Applied Sciences, Germany

Hybrid materials consisting of hydroxyapatite and bio-based polymers used as scaffolds for bone tissue engineering

Large bone defects require fabricated bone constructs that consist of three main components: an artificial extracellular matrix scaffold, stem cells with the potential to differentiate into osteoblasts, and bioactive substances, such as osteo-inductive growth factors to direct the growth and differentiation of cells toward osteogenic lineage within the scaffold. Scaffolds provide a 3D environment for cell seeding and proliferation as well as filling bone defects while affording mechanical competence during the process of bone regeneration. Today, scaffold development is focused on inorganic-organic composites (hybrids), mainly prepared using natural and synthetic polymers (i.e. collagen, polysaccharides), and inorganic hydroxyl-apatite (HA), tricalcium phosphate (TCP). In recent years, tissue engineers used various modifications such as addition of bioactive molecules or nanoparticles to enhance attachment and proliferation of stem cells on the scaffold. Thus, the application of so called "smart scaffolds" enhances osteogenic differentiation of stem cells. In Purinergic receptors, P2X and P2Y play a key role in osteogenic lineage commitment of human mesenchymal stem cells (MSCs) via addition of corresponding P2X/Y receptor ligands (agonists, antagonists) the differentiation process can be triggered towards osteoblast formation. The focus of this contribution is the correlations between scaffold structures, both bulk and surface and corresponding cell behaviour, i.e. adhesion and differentiation. The human MSCs were gained through isolation of jar bone chip and liposuction material harvested during surgeryintervention. Scaffold structure analysis to investigate scaffold hybrid materials (human, bovine, artificial) provides information on their chemical composition, 3D bulk and surface structure. Thus, FTIR spectroscopy, X-ray diffraction (XRD), small angle X-ray scattering (SAXS), scanning electron microscopy (SEM) and zeta potential measurements will be discussed to explain the hybrid structure-property relationships. Three scaffold materials (collagen, bovine, artificial) were analysed regarding their chemical composition, 3D bulk and surface structure. Administration of selective P2Y1 antagonists led to an enhanced matrix mineralization thus confirming the functional role of P2X7 during osteogenesis.

Biography

Margit Schulze has received her PhD at Institute for Organic Chemistry from TH Merseburg/Martin Luther-Universität Halle-Wittenberg in 1990. She hold various position in her career as a Researcher at Martin Luther University Halle-Wittenberg in 1986, Project Leader at Max-Planck-Institute for Polymer Research Mainz in 1994, Senior Lecturer at Royal Institute of Technology (KTH) Stockholm in 1996, Head of Industrial Oils, Degussa/Evonik, Darmstadt during 1998-2000 and since 2001 she holds Professorship (C3) for Organic Chemistry and Polymers at Bonn-Rhein-Sieg University. She has received Research Award of the Hochschule Bonn-Rhein-Sieg together with Edda Tobiasch for "Optimaix Bone Regeneration.

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Igor Malyshev

Moscow State University of Medicine and Dentistry, Russia

Natural amelogenesis and the justification of the technology of enamel regeneration with the help of robotic bioprinting of tissues *in situ*

Loss of teeth because of diseases and injuries leads to disruption of the primary processing of food and reproduction of speech, worsens the aesthetic appearance and, in general, the health and quality of life of the individual. Damage to enamel and caries are the main causes of diseases and tooth loss. The disadvantages of modern methods of caries and enamel damages treatment gave birth to the idea of growing biological equivalents of dental tissues with the help of tissue engineering methods. At the same time, it becomes more and more obvious that it is possible to restore a full-fledged dental tissue only taking into account the laws of natural development of this tissue. Based on an understanding of the molecular and cellular mechanisms of amelogenesis, we proposed the development of a substantially innovative technology for dentistry, the technology of robotic 3D bioprinting of enamel *in situ*. In this technology, a robotic arm can insert a small bioprinting head into the oral cavity with injectors for cells and materials and provide an accurate position of the head over the tooth. After that, the bioprinting head can produce a precision print in the area of the enamel defect. To develop a clinical version of the technology, several problems need to be solved. Technologies of robotic 3D bioprinting of enamel *in situ* can provide advantages in comparison with existing methods of treatment, for example, they will increase life span of dental bio fillings for lifetime, reduce the probability of tooth split and penetration into the pulp chamber, and reduce the negative consequences of the human factor associated with low professionalism, tremor of hands and inattention of the dentist. There is reason to believe that in the next decade regenerative dentistry will become an integral component of the treatment of many intractable dental diseases, and the technologies of robotic 3D bioprinting *in situ* will allow restoring not only individual tooth tissues but the entire tooth complex.

Biography

Igor Malyshev is a Head of the Department of Pathophysiology and Head of the Laboratory of Cell Biotechnology, Medical School at the Moscow State University of Medicine and Dentistry. He is also the Head of the Laboratory of Stress at the Institute of General Pathology and Pathophysiology, Moscow and Adjunct Professor of Biomedical Sciences at University of North Texas Health Science Center, USA. He is a member of the board of directors of the International Society for Adaptive Medicine and an Editorial Board Member of *Journal of Biosciences and Medicines*. He has published three books and monographs and 146 full length articles.

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A L Urakov

Izhevsk State Medical Academy, Russia

Splinting braces by wax and closing splinting braces surface by decorative sticker – new inventions for prevention of blistering disease of cheeks and lips

It is shown that traditional braces cause local irritation of the lips and cheeks of patients due to friction. This irritation can cause reversible and irreversible inflammation until the ulcers. This information may help to prevent the development of blisters, sores, ulcers, i.e., the development of iatrogenic illness that was called blistering or calluses disease from braces. Installed that local injuries of the lips and cheeks are caused not by the braces itself, but by the friction between their hard and hilly parts with the inner surface of the mouth. We found that infrared thermography provides timely detection of early symptoms of the local inflammation of the soft tissues. It is found that the appearance of local hyperthermia zone on the cheek and/or lip inner surface may be considered as a diagnostic symptom for the development of local inflammation. To prevent iatrogenic disease, we developed an original method of splinting braces and original device that eliminates the friction of the braces on the surface of the lips and cheeks. The essence of the method of splinting braces (RU Patent No 2437632, December, 2011) lies in the fact that the teeth with braces need to completely cover the wax up to the formation of her wax roller. Then, the resulting wax roller should be immediately securely covered with food wrap. Then, we decided to close the braces by food wrap. Studies have shown that splinting braces by wax and sticking them on the food wrap completely prevents the development of blisters on the lips and cheeks. To this end, we invented a decorative sticker on the dentition with braces. This device is designed in the form of a tape wound on the spool and is a beautiful analog of a food wrap (Figure 1). The fact that on the sticker surface of the tape placed series of color photographs - panoramic 3D images of the visible front surface of the upper or lower dentition of a healthy person is whole in full size. The results showed that early diagnosis of the beginning of blistering disease in cheeks and lips by infrared thermography and splinting braces by wax and covering the surface by food wrap is prevented from local irritation to the lips and cheeks and the development of iatrogenic disease.

Biography

Aleksandr Urakov has completed MD from Russia, currently working as Head of Department of General and Clinical Pharmacology,Izhevsk State Medical Academy, Russia. He has published more than 65 articles on different covering pharmacology and dentistry in various reputed journals.

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Mahmood Qureshi

Pakistan Academy of Implant Dentistry, Pakistan

The bone renaissance

Introduction: In a relentless pursuance of perfection and a definitive solution for long term stability of tissues around dental implants, the author will present an exceptional concept-the bone renaissance- a unique philosophy encompassing the sequential and codified reversal of the bone back to its original 3-D Engineered Divine Osseo-architecture by incorporating the five in one modus operandi: SABIRIN (Stable Alveolar Bone Implant Reconstructive Integration Naturally), a major paradigm shift in re-establishing the natural spiritual union of the form and function.

Analysis: Loss of teeth always leads to the shrinkage of jaw bone at the extraction site with a 50-70% bone loss in height and width over a period of 2-4 years resulting in unaesthetic facial lines, increase in size of maxillary sinus, over closure, prognathic appearance, reduced horizontal labial angle of lip, loss of tone in muscles of facial expression causing functional, anatomical and cosmetic problems. A typical patient, with existing edentulous areas and desiring implant treatment doesn't have adequate bone to permit implants to be placed into normal root locations. This atrophy is a dynamic functional loss as the bone heals and changes from stress bearing to non-stress bearing bone for implant placement.

Methods: SABIRIN components: Bone renaissance implant placement with special osteotomes, soft tissue manipulation, vascularized osteotomies, sinus & onlay grafts, autologous growth factors & stem cells.

Results: The refurbishment of patients to innate curve, contour, aesthetics and function is achieved by using SABIRIN components which resurrect the lost contours of hard and soft tissues with a long-term, aesthetic predictability.

Discussion: Based on the 25 years of experience, the presenter thoroughly discusses the rationale, gives practical guidelines and presents surgical maneuvers to rectify hard and soft tissue deficiencies complemented by CGF to enhance facial aesthetics.

Biography

Mahmood Qureshi is a Founder President of Pakistan Academy of Implant Dentistry; Director of MQI- International Institute of Implant & Reconstructive Surgery. He has developed and modified several surgical techniques and instruments and is the originator of the '2 IC' Universal Concept and 'SABIRIN'- a unique philosophy of treating the untreatable patients. He has developed MQMET - a revolutionary and an innovative implant placement system. He is the Founder of the 1 year post-graduate curricula in Implantology; Editor of the *International Journal* of IMPLANTS.

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Aslı Topaloglu Ak

Istanbul Aydın University, Turkey

Minimal invasive dentistry: How much caries tissue should we remove?

Caries tissue removal has been done by rotary instruments with different speeds for a long time. It has been revealed that, rotary instruments, cavity preparations based on extension for prevention and black principles can result with loss of healthy dental tissue and tooth in the long term. This led the researches focus on new caries removal techniques that prevent healthy dental tissues. Today this concept is named as minimal invasive approach. Minimal invasive approach aims to remove the soft and infected dentine and leave the affected dentine which has a re-mineralization potential. This can be achieved by treatment modalities such as Atraumatic Restorative Treatment (ART) which uses only hand instruments and chemo-mechanical caries removal in clinical settings. In today's pediatric dentistry, individual treatment manners are constructed on biological process of caries lesion treatment, tissue re-mineralization and plaque control. This perspective helps to avoid pulp perforations and complicated treatment series in primary and young permanent teeth and helps to improve patient-dentist cooperation particularly among children with dental anxiety. In this presentation, in addition to minimal invasive caries removal techniques, stepwise excavation, interim therapeutic restorations, hall and non-restorative caries removal techniques will be discussed.

Biography

Aslı Topaloğlu Ak completed her Graduation from University of Ege, School of Dentistry in 1998, PhD program in 2005 in Department of Pediatric Dentistry at Ege University. In addition, in 2009, she defended her second doctoral thesis entitled "Management of dental caries in primary teeth through minimal intervention approaches" and gained PhD degree from Radboud University in the Netherlands. She worked as an Associate Professor at University of Ege, School of Dentistry, from 2012-2017. Since May 2017, she is working as the Head of Paedodontics Department of Istanbul Aydin University.

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Ritika Arora

Vaidik Dental College, Daman, India

Innovation in dentistry with smart blood derivatives – Platelet Rich Fibrin (PRF), new perspective in soft tissue regeneration & skin rejuvenation

The modern dentistry is moving towards growth factors. One of the best sources of growth factors in the body is blood platelets. The 2nd Generation PRF may be injected or combined with biomaterials. The PRF matrix can be used in soft tissue management & bone augmentation. New perspectives in soft tissue regeneration and bone reconstruction with PRF help to improve aesthetics not for smile designing, but also for implant aesthetics. This lecture focuses on new innovative methods with PRF that can be used in every day practice, with maximum cost/benefit ratio for both the dentist and the patient.

Biography

Ritika Arora completed her Graduation in Dental Surgery in 2000 from Delhi. After working for three years in Clinical Practice, she moved to Mumbai in 2003 to complete Master's degree in Dental Surgery in Periodontics and Oral Implants. Presently, she is working as Professor and HOD in Dept. of Periodontics, VDC Daman, India and as Consultant in various clinics all over Mumbai India. She also has her private clinic Aesthetic Smiles Dental Clinic & Facial Rejuvenation in Mumbai India.

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