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5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

RAINERS HOTEL, VIENNA, AUSTRIA
APRIL 28-29, 2025

DENTISTRY & ORAL HEALTH
APRIL 28-29, 2025 | AUSTRIA

ISBN: 978-1-917892-00-1

ACCREDITED PROVIDER
#778533

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

DAY-1 (APRIL 28)

REGISTRATIONS (08:00 - 08:30)

OPENING REMARKS (08:30 - 09:00)

TECHNICAL SESSION-I

09:00-09:25 **Imaging trends in children and adolescents, from 2D to 3D**

Porumb Anca, University of Oradea, Romania

09:25-09:50 **50 Years of Strabismus Treatment in Vienna, Austria**

Stangler-Zuschrott Elfriede, University of Vienna, Austria

09:50-10:15 **HPV in the Larynx: Recurrent Respiratory Papillomatosis –Past, Present, Future**

Anca M Barbu, Cedars Sinai Medical Center, USA

10:15-10:40 **Management of MRONJ patients with Oxygen-Ozone Therapy: The results of an effective protocol at ASST FBF Sacco Hospital, Milano**

Donati Girolamo, ASST Fatebenefratelli Sacco Hospital, Italy

GROUP PHOTO & REFRESHMENT BREAK (10:40-11:00)

TECHNICAL SESSION-II

11:00-11:25 **Anti-Inflammatory Effect of Specialized Pro-resolving Lipid Mediators on Mesenchymal Stem Cells and Hard Tissue Formation: An In-Vitro Study**

Shahd AlZahrani, General Directorate of Prison Health, Saudi Arabia

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11:25-11:50 **Stochastic SIM: a scan-less super resolution retinal imaging**

Marco Leonetti, IIT CLN2S/CNR Nanotec, Italy

11:50-12:15 **Silver Nanoparticles Versus Chitosan Nanoparticles Effects on Demineralized Enamel**

Mariam Abdelaziz Aly Mohamed Abouayana, Alexandria university, Egypt

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12:15-12:40 **A homozygous SP7/OSX mutation causes osteogenesis and dentinogenesis imperfecta with craniofacial anomalies**

Dalal AI Mutairi, Kuwait University, Kuwait

12:40-13:05 **Biomimetic Hydroxyapatite in oral are applcations**

Marco Lelli, University of Bologna, Italy

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LUNCH @ RESTAURANT (13:05-13:45)

TECHNICAL SESSION-III

13:45-14:10	**The Regulation of Heat Shock Protein 90 on Visual Cycle Homeostasis** **Yanzhong Hu,** Henan University, China
14:10-14:35	**Prefeeding Interventions to Enhance Oral Feeding in Preterm Infants** **Gaoyan Chen,** Xiangyang Central Hospital, China
14:35-15:00	**Results of Primary Treatment and Salvage Treatment in the Management of Patients with Non-Squamous Cell Malignant Tumors of the Sinonasal Region: Single Institution Experience** **Urszula Kacorzyk,** Narodowy Instytut Onkologii, Poland
15:00-15:25	**Tactile working memory in blindness** **Eyal Heled,** Ariel University, Israel
15:25-15:50	**Weight Matters: The Impact of Obesity on Oral Health and Hygiene** **Madinabonu Mirsaidova,** Central Asian University, Uzbekistan

REFRESHMENT BREAK (15:50-16:05)

TECHNICAL SESSION-IV

16:05-16:30	**Efficacy of Erb-Laser on Inferior Turbinate Hypertrophy: A Retrospective and Cohort Study** **Didem Rifki,** Famagusta State Hospital, Cyprus
16:30-16:55	**An Exploratory Investigation of the Effect of a Sports Vision Program on Grade 4 and 5 Female Netball Players' Visual Skills** **Dane-Coetzee,** North-West University, South Africa
16:55-17:20	**Effect on Osteoarticular Cell Proliferation of the Ti-6Al-4V Alloy Surface Modified by Anodic Oxidation** **Enrique Hernaindez Sanchez,** Instituto Politecnico Nacional, Mexico
17:20-17:45	**The Ear, Nose and Throat Essential Skills Trainer** **Abdul Rafay,** Imperial College London, United Kingdom
17:45-18:10	**The Role of EGG in Identifying Prevocalic Glottal Stop** **Ren Zhen,** Peking university school of stomatology, China

END OF DAY-01

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DAY-2 (APRIL 29)

TECHNICAL SESSION-I

09:00-09:25 **Tooth abnormalities and their age dependent occurrence in leukemia survivors**

Anna Jodłowska, Medical University of Silesia, Poland

09:25-09:50 **Microsurgical Flow Reconstruction Targeting Adventitial Layer for Long-Segment Cervical ICA Tubular Stenosis Accompanying with Distal Grade 2 or 3 Kinking: Clinical Outcomes of 19 Cases.**

Mehmet Erkan Ustun, Department of Neurosurgery and Anatomy, Turkey

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09:50-10:15 **Scale for the Assessment of Mucosal Wave Dynamics of the Free Edges during Stroboscopic Examination; Clinical Validation Study and Results Analysis**

Tenesaca Pintado Walter, Hospital Campo de Arañuelo, Spain

10:15-10:40 **A Multi-Stage Framework for Cardiovascular Risk Assessment from Retinal Images Using a Fusion of Deep Learning and Computer Vision Techniques**

Madhura Prakash M, Forus Health Private Limited, India

TECHNICAL SESSION-II

REFRESHMENT BREAK

10:40-11:05 **Revolutionizing Maxillary Obturator Prosthesis Fabrication: Synergy of CAD/CAM Technologies and Traditional Methods**

Ines Saadellaoui, University of Monastir, Tunisia

11:05-11:30 **A comparison of traditional learning and combined traditional – Elearning(web-based) on students' learning of practical oral pathology course in students of Birjand University of medical sciences**

Leili Alizadeh, Birjand University of Medical Science, Iran

11:30-11:55 **Reflectance Spectral Images of the Retina as a Biosensor of Alzheimer's Disease**

Zita Salajkova, Fondazione Istituto Italiano di Tecnologia, Italy

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11:55-12:20 **From Neurons to Epithelia: Tau-RhoGTPase Crosstalk in Cytoskeletal Regulation**

Neha Tiwari, Banaras Hindu University, India

12:20-12:45 **Eulogy of the Professor Yves POULIQUEN France**

Jean-.Louis. DUFIER, National Academy of Medicine Paris France

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LUNCH BREAK

TECHNICAL SESSION-III

12:45-13:10	**Manufacturing new types of dental implants with Selective laser melting technology and personalize the dental implants with this technology** **Omid Ashkani,** Islamic Azad University, Iran
13:10-13:35	**Improving Organizational Commitment among Healthcare Employees in Angola: The Role of Psychological Capital and Perceived Transformational Leadership** **Rosa Geremias,** Polytechnic Institute of Lisbon, Portugal
13:35-14:00	**Molecular Profiling of Non-Small Cell Lung Cancer in Morocco: Insights from Targeted PCR and Next-Generation Sequencing Analyses** **Ouafaa Morjani,** Hassan II University, Morocco
14:00-14:25	**Treatment protocol to control Streptococcus mutans level in an orthodontic patient with high caries risk.** **Patricia Valeria Milanezi Alves,** Federal University of Rio de Janeiro, Brazil

REFRESHMENT BREAK

TECHNICAL SESSION-IV

14:25-14:50	**Effect of hypertension and diabetes on prevalence of inflammatory and infectious eye diseases** **Krati Chauhan,** University of Vermont School of Medicine, USA
14:50-15:15	**Sleep Apnea and its associated Cardiac Disorders/Implication** **Krutarth Pandya,** Cleveland Clinic, USA
15:15-15:40	**Painless Granulomatous (Sub acute) Thyroiditis in a very young Female: A Case Report and Literature Review** **Riya Patel,** NEOMED, USA
15:40-16:05	**Use of Vibrational Optical Coherence Tomography to Characterize Corneal Biomechanics in Health and Disease** **Frederick H. Silve,** The State University of New Jersey, USA
16:05-16:30	**Can AI Predict the Ortho-K Contact Lens Decentration?** **Ahmed Abass,** University of Liverpool, UK
16:30-16:55	**Facial neuromas, an underdiagnosed pathology in facial palsy: A systematic review** **Mia Miller, Cedars Sinai Medical Center, USA**
16:55-17:20	**Diabetes mellitus and its sixth complication explained** **Christopher Turner,** Spacemark Dental, United Kingdom

CLOSING REMARKS

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Madinabonu Mirsaidova

Dental school, Central Asian University, Tashkent, Uzbekistan

Weight Matters: The Impact of Obesity on Oral Health and Hygiene

Abstract:

Introduction: Obesity, defined as a condition marked by excess body fat, has emerged as a public health concern with far-reaching consequences for individual health and overall well-being. While the systemic health complications associated with obesity are broadly acknowledged, its impact on oral health is often overlooked. This study aims to investigate how obesity influences oral health outcomes, including the prevalence of dental caries, periodontal disease, and other oral conditions. By examining the relationship between obesity and oral health, this research seeks to enhance awareness regarding the importance of maintaining a healthy weight not only for physical health but also for optimal oral health.

Methodology: The study performed a systematic review of literature along with oral check-ups regarding the relationship between obesity and oral health conditions. It utilized online databases such as Scopus, PubMed, Google Scholar to identify relevant articles discussing their correlation and associations. The acquired data were analyzed and integrated to provide thorough insight into the topic.

Result: A notable correlation between obesity and oral health issues was discovered. Obese individuals tended to have higher DMFT indexes and experience more tooth loss, influenced by factors like age, sugar intake, and poor oral hygiene practices. Furthermore, the prevalence of periodontal disease was found to be elevated among obese populations, indicating complex interactions involving inflammation and oxidative stress.

Conclusion: The majority of overweight individuals were unaware of the effects of their sugary diets and often neglected oral hygiene, underscoring the need to implement health education programs that promote healthy eating habits and proper oral hygiene practices. In addition, a multidisciplinary approach involving dentists, medical professionals, and dietitians can enhance prevention and treatment efforts for obese individuals. Future research should focus on exploring the intricate relationships that exist between obesity, oral health, and dietary habits to pave the way for more effective interventions.

Biography: Madinabonu is a third year student at the School of Dentistry, Central Asian University in Tashkent, Uzbekistan. Her keen interest in various academic aspects have earned her the prestigious toppers award. In addition, she has published an article in a Scopus-Indexed journal. Engaging actively in student council activities, she showcases remarkable leadership skills. Beyond her studies, she passionately volunteers in various events and contributes her time to charitable work needed for hospitals. Fluent in Uzbek, English, and Russian, Madinabonu's multilingual proficiency reflects her cultural adaptability and facilitates effective communication across diverse communities.

doi.org/10.51219/URForum.2025.Madinabonu-Mirsaidova

ISBN: 978-1-917892-00-1

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Mariam Abdelaziz Aly Mohamed Abouayana

Faculty of dentistry, Alexandria University, Egypt

Silver Nanoparticles Versus Chitosan Nanoparticles Effects on Demineralized Enamel

Abstract: Enamel is an exclusively epithelial-derived dental tissue that possesses a unique microstructure and outstanding physicochemical properties. To combat the challenge of cariogenic diseases that cause enamel demineralization, a number of approaches have been applied. The purpose of this study was to compare the impacts of different remineralizing agents on demineralized enamel, we focused on chitosan nanoparticles (ChiNPs) and silver nanoparticles (AgNPs). This study was conducted on 40 extracted human premolars with artificially induced demineralization using demineralizing solution. Prior to the beginning of the experimental procedures, the samples were preserved in artificial saliva solution. The nanoparticles were characterized by transmission electron microscopy (TEM) and teeth were divided into four equal groups: Group A was utilized as a control group (no demineralization) and received no treatment. Group B was subjected to demineralization with no treatment. Group C was subjected to demineralization and then treated with ChiNPs. Group D was subjected to demineralization and then treated with AgNPs. The teeth were evaluated for microhardness. The enamel surfaces of all the samples were analysed by scanning electron microscopy (SEM) for morphological changes and energy dispersive X-ray analysis (EDX) for elemental analysis. The third and fourth groups had the highest mean microhardness and calcium (Ca) and phosphorous (P) contents. SEM of these two groups revealed relative restoration of homogenous remineralized enamel surface architecture with minimal micropores. Chitosan nanoparticles (NPs) and silver NPs help restore the enamel surface architecture and mineral content. Therefore, chitosan NPs and AgNPs would be beneficial for remineralizing enamel and for its regeneration.

Biography: Mariam has completed her PhD at the age of 31 years from Alexandria University. She is the director of Oral Biology and Dental Anatomy. She is interested in the field of nanodentistry she has published more than one paper in the field of nanotechnology. She is working also as a lecturer in Alamein University and in Manchester program in Alexandria University.

doi.org/10.51219/URForum.2025.Mariam-Abdelaziz-Abuayana

ISBN: 978-1-917892-00-1

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Porumb Anca, Pop Marina Antoneta, Porumb Mihai

University from Oradea, Romania

Imaging trends in children and adolescents, from 2D to 3D

Abstract: Pediatric dentistry has become, in the last decades, an independent discipline, in order to improve the dental care provided to the children.

The discovery in 1885 by Roentgen of X-rays had a huge contribution to the development of dentistry in general and, including, pediatric dentistry. But, the concepts and the doses used in pediatric dentistry are different from those used in adults.

The present work aims to assess the dental radiographs most often used in children and adolescents, from 2D to 3D, according to ALARA principles.

Key-words: imaging, children, pediatric dentistry, ALARA principles.

Biography: Vice President of the College of Dentists in Bihor County, Romania
2 specializations: General Dentistry and Orthodontics
Competence in Maxillo-Dental Radiodiagnosis
Private practice for 25 years
PHD thesis and Habilitation thesis based on dental imaging topics
University Professor since 2021
Author of several specialized books
Invited as a speaker at a large number of congresses on dental imaging topics, with applicability in pedodontics and orthodontics

doi.org/10.51219/URForum.2025.Porumb-Anca

ISBN: 978-1-917892-00-1

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Urszula Kacorzyk, Marek Kentnowski, Ewa Chmielnik, Krzysztof Składowski, Tomasz Rutkowski

1st Radiation and Clinical Oncology Department, Maria Sklodowska-Curie National Research Institute of Oncology, Gliwice Branch, Gliwice,

Results of Primary Treatment and Salvage Treatment in the Management of Patients with Non-Squamous Cell Malignant Tumors of the Sinonasal Region: Single Institution Experience

Abstract: Non-squamous cell carcinoma-related malignant sinonasal tract tumors (non-SCC MSTT) are rare and diverse malignancies. The treatment outcome has been presented, involving both primary treatment and salvage approaches. Data from 61 patients treated radically due to non-SCC MSTT between 2000 and 2016 at the National Cancer Research Institute, Gliwice branch, were analyzed. The group consisted of the following subtypes: adenoid cystic carcinoma (ACC), undifferentiated sinonasal carcinoma (USC), sarcoma, olfactory neuroblastoma (ONB), adenocarcinoma, small cell neuroendocrine carcinoma (SNC), mucoepidermic carcinoma (MEC), and acinic cell carcinoma, which were found in nineteen (31%), seventeen (28%), seven (11.5%), seven (11.5%), five (8%), three (5%), two (3%) and one (2%) of patients, respectively. All patients underwent radical treatment. The combined treatment consisted of surgery and radiotherapy (RT) and was given to 52 (85%) patients.Locoregional treatment failure was seen in 21 (34%) patients. Salvage treatment was performed in fifteen (71%) patients and was effective in nine (60%) cases. There was a significant difference in OS between patients who underwent salvage and those who did not (median: 40 months vs. 7 months, $p = 0.01$). In the group of patients who underwent salvage, OS was significantly longer when the procedure was effective (median: 80.5 months) than if it failed (median: 20.5 months), $p < 0.0001$. OS in patients after effective salvage was the same as in patients who were primary cured (median: 80.5 months vs. 88 months, $p = 0.8$). Distant metastases developed in ten (16%) patients. Five and ten year LRC, MFS, DFS, and OS were 69%, 83%, 60%, 70%, and 58%, 83%, 47%, 49%, respectively. In this study, we indicate that salvage is possible in most patients with non-SCC MSTT with locoregional failure and that it may significantly prolong their overall survival.

Biography: Urszula Kacorzyk serves as a medical specialist in radiotherapy at the 1st Department of Radiotherapy and Chemotherapy. Her clinical acumen is complemented by her active participation as a co-researcher in numerous clinical studies, grants, and scientific projects. Her main interest is head and neck cancer, with particular emphasis on the subject of sinus cancer. The subject of her doctoral dissertation is cancer of the paranasal sinuses. She has published more papers in reputed journal and presents the results of studies in conferences.

doi.org/10.51219/URForum.2025.Urszula-Kacorzyk

ISBN: 978-1-917892-00-1

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Enrique Hernandez Sanchez

Instituto Politécnico Nacional, UPIBI, Laboratorio de Caracterización Física y Mecánica de Biomateriales, Avenida Acueducto s/n, Barrio La Laguna Ticomán, México City

Effect on Osteoarticular Cell Proliferation of the Ti-6Al-4V Alloy Surface Modified by Anodic Oxidation

Abstract: This investigation describes the formation of crystalline nanotubes of titanium oxide on the surface of a Ti-6Al-4V alloy and its biological evaluation. The formation of nanotubes was performed by the anodic oxidation technique with a constant work potential of 60 V but with diferent anodizing times of 10, 20, 30, 40, 50, and 60 min used to evaluate their e ects on the characteristics of the nanotubes and their biological activity. A mixture of ethylene glycol, water, and ammonium fluoride (NH4F) was used as the electrolytic fluid. Scanning electron microscopy (SEM) and X-ray difraction (XRD) were applied to determine the morphology and crystalline nature of the nanotubes, showing a well-defined matrix of nanotubes of titanium oxide with a crystalline structure and a diameter in the range of 52.5 ± 5.13 to 95 ± 11.92 nm. In contrast, the XRD patterns showed an increase of defined peaks that directly correlated with treatment times. Moreover, in vitro assays using an innovative cell culture device demonstrated that the inner diameter of the nanotubes directly correlated with cell proliferation.

Biography: Dr. Enrique Hernández Sánchez has completed his PhD at the age of 45 years from Instituto Politécnico Nacional-México and postdoctoral studies from metropolitan autonomous university of México in material science. He is the director of Laboratory for the Physical and Mechanical Characterization of Biomaterials of the Interdisciplinary Professional Unit of Biotechnology of the National Polytechnic Institute, México. He has published more than 45 papers in reputed journals in the biomaterials field and has been serving as reviewer in reputed journals.

doi.org/10.51219/URForum.2025.Enrique-Hernaindez-Sainchez

ISBN: 978-1-917892-00-1

Dr Donati[1], Dr Rania[1], Dr Busa[1], Dr Funda Goker[2,3], Dr Massimo Del Fabbro[2,3]

[1]ASST Fatebenefratelli Sacco Hospital, Dentistry Department, Milan, Italy
[2]University of Milano, Department of Biomedical, Surgical and Dental Sciences, Milan, Italy
[3]Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico di Milano, Milan, Itay

Management of MRONJ patients with Oxygen-Ozone Therapy: The results of an effective protocol at ASST FBF Sacco Hospital, Milano

Abstract: Medication-related osteonecrosis of the jaw (MRONJ) is a side effect of some certain medications used in metabolic and oncological pathologies involving the skeletal system. This prospective clinical study aimed to evaluate the effectiveness of the applications of the oxygen-ozone mixture in patients with MRONJ. The treatment protocol included 10 preoperative applications of the oxygen-ozone mixture, debridement of the necrotic tissue using piezoelectric surgery instruments and post-operative 10 applications of the oxygen-ozone (20 applications in total). The objective was to evaluate healing of the osteonecrotic lesion both clinically and radiologically. The study included 46 lesions in 44 patients. The average follow-up was 42 months. For the evaluations, patients were divided into groups considering age [<40, 40-60, >60], underlying pathology [oncology, osteoporosis, and arthritis], sex [male, female], and lesion location [maxilla, mandible].

According to the results, 32 lesions out of 46 without any recurrence. 16 sites healed without any need for intervention. 5 patients discontinued therapy due to worsening of their health. 4 patients are still under treatment. 5 out of 46 sites did not heal. Statistically, the results were not influenced by variables such as sex, age, location of the lesion and staging of MRONJ. Significantly better results were obtained in patients with osteoporosis. The progress was worse for oncological patients. Healing was significantly less in patients that received intravascular administrations. In 50% of the resolved cases, healing occurred with the spontaneous expulsion of the necrotic fragment and the planned surgical interventions were cancelled. According to the results, healing of MRONJ lesions was observed in 72% of patients. In conclusion, oxygen/ozone therapy with Piezoelectric surgery debridement, can be considered as an effective treatment for MRONJ patients, with advantages such as low biological cost, being extremely safe and it is free from collateral risks and not contraindicated for patients with MRONJ.

doi.org/10.51219/URForum.2025.Donati-Girolamo

ISBN: 978-1-917892-00-1

Biography :

2020: II Level Professional Master in Oxygen – Ozone Therapy, Faculty of Medicine and Surgery, Department of Internal Medicine and Medical Therapy - University of Pavia

2011: Theoretical and practical course in Oxygen Ozone therapy

96/97: Advanced course "Intercepted Orthodontics - University of Pavia

95/96: Advanced course "Multidisciplinary approach to the orthodontic patient" - University of Milan, S Raffaele

1991 Post-graduate School in abdominal surgery and digestive endoscopy - University of Milan

1986 Degree and Habilitation in Medicine and Surgery - University of Milan

1979 Scientific Diploma obtained at the XII Liceo (Rassel) in Milan

Responsible and promoter of the Project "Treatment of maxillary osteonecrosis from drugs with oxygen-ozone therapy and surgical debridement, authorized by the Ethics Committee. Still in progress
From 2023 to date: Acting Director of the SC Dentistry and Stomatology Sacco ASST FBF Sacco

doi.org/10.51219/URForum.2025.Donati-Girolamo

ISBN: 978-1-917892-00-1

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Marco Lelli

Freelacer – In collaboration with Department of Industrial Chemistry "Toso Montanari", University of Bologna, 40126 Bologna, Italy

Biomimetic Hydroxyapatite in oral are applications

Abstract: Calcium phosphate compounds form the inorganic phases of our mineralised tissues such as bone and teeth, playing an important role in hard tissue engineering and regenerative medicine. In dentistry and oral care products, biomimetic hydroxyapatite (HA) is a stable and biocompatible calcium phosphate with low solubility being used for various applications such as tooth remineralisation, reduction of tooth sensitivity, oral biofilm control, and tooth whitening. Clinical data on these products is limited with varied results; additionally, the effectiveness of these apatite compounds versus fluoride, which has conventionally been used in toothpaste, has not been established. It's therefore possible evaluates current research on Biomimetic HA oral care, and discusses the role and mechanism of hydroxyapatite and biomimetic HA in remineralisation of both enamel and dentine and for suppressing dentine sensitivity. Furthermore, we position HA's role in biofilm management and highlight the role of HA in dental applications by summarising the recent achievement and providing an overview of commercialised Biomimetic HA in different dental products. The review also indicates the existing limitations and provides direction for future research and commercialisation of apatite-based oral care products.

Biography: Marco Lelli is graduated in Pure Chemistry in 2007 at the University of Bologna - Department of Chemistry "G. Ciamician".

He worked at the University of Bologna, Department of Chemistry "G. Ciamician" as a research fellow until 2013. He currently works as a freelancer and collaborates with companies in the Oral Care sector (as a scientific consultant). It works in collaboration with universities and research centers.

He is the author of over 50 articles and patents

doi.org/10.51219/URForum.2025.Marco-Lelli

ISBN: 978-1-917892-00-1

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April 28-29, 2025 | VIENNA, AUSTRIA

Ren Zhen

Peking University School of stomatology, Beijing, China

The Role of EGG in Identifying Prevocalic Glottal Stop

Abstract:

Objective: The aim of the study is to investigate the use of incidences and characteristics of Prevocalic Electroglottographic Signal (PVES) derived from electroglottography (EGG) in characterizing glottal stops (GS) in cleft palate speech.

Methods: Mandarin nonaspirated monosyllabic first-tone words were used for the speech sampling procedure. A total of 1680 utterances (from 83 patients with repaired cleft palates) were divided into three categories based on the results of auditory-perceptual evaluation of recorded speech sounds by three independent reviewers: [Category A (absence of GS agreed by all three reviewers) (n = 1192 tokens), Category B (two out of three reviewers agreed on the presence of a GS) (n = 181 tokens) and Category C (all three reviewers agreed on the presence of a GS) (n = 307 tokens)]. The EGG signals of the 1680 utterances were analyzed using a MATLAB program to automatically mark the instances of PVES (amplitude and time-interval) in the GS utterances.

Results: The result showed that the incidence of EGG PVES presented good positive correlation with auditory-perceptual evaluation ($r = 0.703$, $P < 0.000$). Statistical analysis revealed a significant difference in mean PVES amplitude among different groups ($P < 0.05$). There was a significant distinction in the time interval between groups A and B, as well as in groups A and C ($P < 0.05$).

Conclusions: The study suggests PVES can be an objective means of identifying GS in cleft palate speech. It also indicates that proportion of amplitude and time interval of PVES tend to be positively correlate with subjective assessment.

Biography: Ren Zhen, Medical doctor & Attending Physician, graduated from Peking University School and Hospital of Stomatology in 2018, majoring in Oral and Maxillofacial Surgery. Her expertise covers diagnosing and treating various oral - maxillofacial conditions. Notably, she focuses on cleft palate speech research.

doi.org/10.51219/URForum.2025.Ren-Zhen

ISBN: 978-1-917892-00-1

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Dr. Shahd Al Zahrani

Department of Restorative Dentistry, Division of Endodontics

Anti-Inflammatory Effect of Specialized Proresolving Lipid Mediators on Mesenchymal Stem Cells and Hard Tissue Formation: An In-Vitro Study

Abstract:

Introduction: Inflammation is a sophisticated biological reaction designed to protect the body from detrimental stimuli and facilitate tissue healing. Nonetheless, dysregulated or unresolved inflammation can result in chronic illnesses and tissue injury. Specialized pro-resolving mediators (SPMs) are natural lipid-based molecules that play vital roles in the resolution of inflammation. Among SPMs, Resolvin E1 (RvE1) and maresin 1 (MaR1) play a protective biological role in eliminating the unfavorable inflammatory effects of insulting influxes and stimulating the reparative tissue process. A relatively new concept was established, in which SPMs actively enhance the inflammatory resolution and tissue regeneration that leads to inflammation resolution by providing “stop signals” that contribute to pro-inflammatory cytokines clearance, preventing damage in inflammatory diseases. To date, there is no available evidence evaluating the effects of a combined mixture of RvE1 and MaR1 on bone remodeling and inflammatory lesion healing processes.

Objectives:

- To compare the effects of RvE1 and MaR1 on human bone marrow-derived mesenchymal stem cell (hBMMSC) viability, proliferation, migration, survival capacity, and expression of inflammation-related cytokines in an inflammatory microenvironment.
- To evaluate the individual and combined effects of RvE1 and MaR1 on osteogenesis-related protein expression in hBMMSCs in an inflammatory microenvironment.

Materials and Methods:

Part I: The effects of RvE1 and MaR1 in lipopolysaccharide (LPS) stimulated hBMMSCs were determined. The hBMMSCs were divided into five different groups, each of which was treated with or without SPMs. Group-1: negative control (no LPS stimulation), Group-2: positive control (LPS-stimulated), Group-3: RvE1 100 nM + 1 µg/mL LPS, Group-4: MaR1 100 nM + 1 µg/mL LPS, and Group-5: RvE1 100 nM + MaR1100 nM + 1 µg/mL LPS. Cell proliferation, apoptosis, migration, colony formation, Western blotting, cytokine array, and LC/MS analysis were all performed on each group to determine the impact of SPMs on inflamed hBMMSCs. p-value ≤ 0.05 was considered as significant.

Part II: The influence of applying RvE1 and MaR1, either individually or in combination, on the osteogenic differentiation of hBMMSCs under inflammatory conditions was investigated. The hBMMSCs were treated with SPMs in the presence of LPS to mimic an inflammatory environment. Osteogenic differentiation was evaluated using Alkaline Phosphatase activity (ALP) and Alizarin Red staining. Additionally, we conducted proteomic analysis to characterize changes in the protein expression profile, focusing on proteins associated with osteogenesis and osteoclastogenesis across the three experimental groups and at 7- and 14-days’ time points. p-value ≤ 0.05 was considered as significant.

doi.org/10.51219/URForum.2025.Shahd-AlZahrani

ISBN: 978-1-917892-00-1

Results:

Part I: RvE1 plus MaR1 effectively reduced inflammation in hBMMSCs. Specifically, there was observed upregulation of Interleukin-4 (IL-4), Interleukin-10 (IL-10), and Transforming Growth Factor-β1 (TGF-β1), along with downregulation of Receptor Activator of Nuclear factor kappa-B Ligand (RANKL), Tumor Necrosis Factor-α (TNF-α), and Interferon-γ (IFN-γ). These changes demonstrated significant differences compared to groups receiving single treatment approach (A p-value of ≤ 0.05). Furthermore, the LC/MS analysis identified the distinctive role of differentially regulated peptides in immunological pathways that characterize the cellular response to inflammation. Inflamed hBMMSCs treated with a combination of RvE1 and MaR1 promoted the highest inflammatory resolution compared to the other groups (>2-fold change, and $p \leq 0.05$); this finding suggests a potential new approach of treating inflammation caused by dental infections.

Part II: Treatment with RvE1 and MaR1, both individually and in combination, significantly enhanced calcified deposit formation (A p-value of ≤ 0.05). Proteomic analysis revealed differential expression of proteins associated with osteogenesis and osteoclastogenesis, highlighting the modulatory impact of SPMs on bone metabolism (>2-fold change, and $p \leq 0.05$). RvE1 and MaR1 promote osteogenic differentiation of hBMMSCs in an inflammatory environment, with their combined application yielding synergistic effects. This study provides insights into the therapeutic potential of SPMs in enhancing bone regeneration, suggesting a promising avenue for developing regenerative therapies for periodontal disease and other conditions characterized by inflammation-induced bone loss.

Conclusions: RvE1 and MaR1 inhibited excessive inflammation and enhanced bone mineralization while causing no significant cellular damage. Therefore, the simultaneous use of RvE1 and MaR1 may offer advantages for treatment and represent a promising therapeutic strategy to support the integrity of hBMMSCs in inflammatory environments.

Biography: Dr. Shahd Alzahrani is an Endodontist at the Ministry of Interior Medical Services. She holds both a Bachelor of Dental Surgery (BDS) and a Doctor of Science in Dentistry (DScD) in Endodontics from King Saud University (KSU), Saudi Arabia. Alongside her clinical practice, Dr. Alzahrani has been involved in postgraduate dental education at KSU and was previously granted research support for a two-year project at King Faisal Specialist Hospital and Research Center.

Her clinical and research interests center on regenerative endodontics and the advancement of endodontic materials and techniques. She has authored several publications in peer-reviewed journals, including work on regenerative approaches and rotary instrumentation. Dr. Alzahrani is a member of the American Association of Endodontists (AAE) and the Saudi Endodontic Society (SES).

doi.org/10.51219/URForum.2025.Shahd-AlZahrani

ISBN: 978-1-917892-00-1

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Christopher Turner, MSc, BDS, MDS, FDSRCS, FCGDent, QDR

Specialist in Restorative Dentistry (Rtd), Bath UK

Diabetes mellitus and its sixth complication explained.

Abstract: In 1999 Löe described periodontal disease (PD) as the sixth complication of diabetes mellitus (DM) because this latter group of patients has a 3 – 4 times greater risk of developing PD when compared with non-diabetics. This rises to 10 times for smokers.

DM and PD are inter-related, one disease affecting the other and vice versa. The exact mechanism is unclear but may be related to inflammation, blood markers for which are raised in both diseases.

From the medical point of view there are five complications of DM namely cardiac, vascular, renal, ophthalmic and neurological that can be visualised as a simple hub called DM with spokes for the above complications.

However, the research evidence has shown that the severity of all these five complications is worse when patients have active, uncontrolled PD. When PD is treated, there is an improvement in glycaemic control.

These results have led to the conclusion that PD is not a separate complication of DM but a co-morbidity factor acting by:modifying the severity of another disease and modulating the severity of diabetic complications in the manner of a rheostat. A new model is proposed together with a system for doctors and dentists to work together.

There are likely to be wide variations in outcomes depending on both the bacteriological load from mature dental plaque and individual immune responses.

Medical and dental risks have been classified using a traffic light method for people living with diabetes mellitus to share with their respective advisors.

A method of improved interdental plaque control is described.

More focussed research is required.

doi.org/10.51219/URForum.2025.Christopher-Turner

ISBN: 978-1-917892-00-1

Biography: Dr. Christopher Turner qualified from the Royal Dental Hospital of London with the degree of Bachelor of Dental Surgery with distinctions in 1968 and spent the first few years working in general practice before undertaking higher training in restorative dentistry in London and Newcastle upon Tyne. During this time, he passed the Fellowship in Dentistry examinations of the Royal College of Surgeons of England and gained his Master of Dental Surgery degree.

In 1979, aged 34 years, he was appointed as a Consultant/Senior Lecturer in the University of Sheffield Dental School with the remit to establish new Department and a self-contained multi-surgery unit, separate from the school, for final year dental students to help them make the transition to qualified general practitioner. This was the first unit of its kind in the UK, has been copied and continues in the same building today. Then in 1984, he moved to an NHS appointment as Director of Dental Services in Salisbury. He took early retirement from the NHS in 2000 to establish a multidisciplinary private referral practice before retiring in 2012.

He has always had an interest in prevention and plaque control and the links between diabetes mellitus and periodontitis, and is the inventor of the Chooseabrush® method to help patients with gingival recession optimise their oral health.

doi.org/10.51219/URForum.2025.Christopher-Turner

ISBN: 978-1-917892-00-1

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Anna Jodłowska

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Tooth abnormalities and their age dependent occurrence in leukemia survivors

Abstract: The multidrug nature of anticancer treatment and different treatment protocols used in the studies are likely to be a major limitation in establishment of real risk factors determining the occurrence of dental abnormalities. The authors aimed to establish a relationship between the duration and the dose of chemotherapy, and the number of tooth adverse effects in 7 leukemia survivors receiving the treatment according to ALL IC-BFM 2002 protocol. As a result of clinical and radiological examination the dental abnormalities were identified and the medical records of all survivors were reviewed in terms of drugs administered, their doses and treatment schedules. No correlation was observed between treatment duration of an intensive therapy, the entire therapy and the number of tooth abnormalities. No relationship was also found between the number of dental abnormalities and the cumulative dose of vincristine, L-asparaginase, methotrexate, cyclophosphamide, cytarabine and 6-mercaptopurine. The age at the onset of the antineoplastic therapy is likely to be the strongest risk factor for the toxic injury during tooth development.

Biography: Anna Jodłowska is a scientific and didactic employee of Department of Pediatric Dentistry in Medical University of Silesia, Poland. She is a specialist of pediatric dentistry. A PhD was obtained in 2007 after long-term research on apexification. For many years she has been dealing with impact of chemotherapy on dental development. Various aspects of analyzed problem have been documented in numerous publications and have been also presented by the author at several foreign medical and dental congresses. Main areas of her interest are endodontic treatment, tooth abnormalities, dental traumatology, and dental treatment under general anesthesia. She is a member of Polish Dental Association.

doi.org/10.51219/URForum.2025.Anna-Jodlowska

ISBN: 978-1-917892-00-1

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Omid Ashkani

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Manufacturing new types of dental implants with Selective laser melting technology and personalize the dental implants with this technology

Abstract: Selective Laser Melting technology is one of the importance methods for manufacturing different parts including dental implants. Fast manufacturing, reliability and Personalization capability are the properties of this method. Usually, machining process is using for manufacturing dental implants that have some waste of materials. For these reasons, we can use SLM technology for manufacturing dental implants. The results show we can manufacture both of Narrow and regular type dental implants and also, the tensile strength, hardness and biocompatibility of dental implants manufactured by SLM method is equal with machining method. In this research Ti-6Al-4V alloy was chosen for manufacture dental implant with SLM technology. The results showed that using this method can produce dental implants of appropriate quality. The holes created in this method may be a suitable place for bone formation. The results of the MTT test also showed that this alloy has the desired biocompatibility with the aforementioned method. In addition to the above, the SLM method has a high ability to personalize types of implants, which can be recognized as the main strength of this method and specific types of implants can be designed according to the jaw of each patient.

Biography: I am Omid Ashkani, the head of Green quality Strivers Company, Full Doctorate of Business Administration from Tehran University and Ph.D. Candidate of advanced materials in Islamic Azad University. In general, my field of study is research in the field of material simulation, SLM Technology, material design and also in the field of Quantum dots technology. In the past years I was worked in the field of QDs in bio-imaging and drug delivery systems. Also we are working in the field of SLM technology for personalizing the human prosthesis.
I welcome any further research into advanced materials, especially quantum dots, in the development of new technologies.

ISBN: 978-1-917892-00-1

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Improving Organizational Commitment among Healthcare Employees in Angola: The Role of Psychological Capital and Perceived Transformational Leadership

Abstract: While previous studies conducted in sub-Saharan African countries have focused on verifying standards of clinical care and assessing challenges faced by healthcare professionals, the present study fills a gap in the literature in that it explores the factors that may drive the organizational commitment of healthcare professionals in Angola. This study aimed to analyze the relationship between psychological capital and organizational commitment through perceived transformational leadership. Therefore, using the quantitative methodology, a self-report questionnaire was applied to 342 healthcare professionals (174 male, 168 female) from different public and private hospitals located in three large cities in Angola. The results confirmed that psychological capital is positively related to affective commitment and that perceived transformational leadership is a mediating variable of this relationship. Therefore, this study highlights the role of psychological capital and perceived transformational leadership in improving affective commitment in challenging environments.

Keywords: psychological capital; perceived transformational leadership; affective commitment; normative commitment; continuance commitment; Angola

Biography: PhD in Organizational Behavior from the Higher Institute of Social and Political Sciences, in 2021. Master's degree in Business Sciences from the Higher Institute of Economics and Management. She is a visiting Adjunct Professor at ISCAL and coordinator of the Organizational Commitment Curricular Unit in the Bachelor's Degree in International Business and Commerce. Consolidated experience as a researcher of several scientific articles published in indexed international journals and winner of the award - Best Reviewer of the European Academy of Management (2020) and Best Reviewer of Organizational Behavior (SIG/2021). She was the National Representative of Portugal at EURAM (European Academy of Management), in the period 2019-2022.

ISBN: 978-1-917892-00-1

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Leili Alizadeh

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A comparison of traditional learning and combined traditional – Elearning(web-based) on students' learning of practical oral pathology course in students of Birjand University of medical sciences

Abstract:

Background: Nowadays pathology course is presented in classrooms. The aim of this study was to compare the effect of traditional and combined instructions on learning of practical oral pathology course.

Methods: The present study is a quasi-experimental study. The study population consisted of 34 students of general dentistry who had successfully passed the practical oral Pathology course 1 and had the Oral Pathology course 2 ahead and were randomly entered into the study. Part of the educational package was located at the learning management system of birjand university of medical sciences (http://bumsnavid.vums.ac.ir). The students of the dentistry field were divided into two equal groups. One group studied the content before the class. Then the class was held for both groups. After a while, there was an evaluation of both combined and traditional learning and the exam was through observing the microscopic view of the lesions and histopathological diagnosis and microscopic description of the lesions. The data obtained from that, was entered into the statistical software, and A comparison of traditional learning and combined traditional – E learning(web-based) on students' learning of practical oral pathology course in students of Birjand University of medical sciences was done.

Results: A total of 34 students taking Practical Oral Pathology II in the first semester of 2020-2021 participated in the study. There were 23 female (67.6%) and 11 male (32.4%) students. The mean age of was 22.42 years. Of 34 participants, 17 students attended traditional classes (6 male and 11 female). In addition, 17 students attended blended traditional-virtual classes (5 male and 12 female). Learning was evaluated based on the students' evaluations scores in a range of 0 (lowest) to 6 (highest). The traditional and blended groups had mean scores of 3.6 and 4.3, respectively. The mean difference between the traditional and blended groups' final exam score was statistically significant (P = 0.015).

Conclusions: Web-based education can be used as a complementary educational method alongside traditional education to have a greater impact on student learning.

Keywords: Traditional learning, Combined learning, E-learning, Oral pathology, Dentistry students

Biography: Leili Alizadeh successfully completed her general dentistry course at Guilan University of Medical Sciences in 2010 at the age of 25 years. In 2016, she completed a specialized course of oral and maxillofacial pathology at Yazd University of Medical Sciences. She has been a member of the Faculty of Dentistry in Birjand since 2016 and has published articles in various fields of dentistry. Since 2019, she has been the deputy of education in Birjand's Faculty of Dentistry.

ISBN: 978-1-917892-00-1

5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Patrícia Valéria Milanezi Alves

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Treatment protocol to control Streptococcus mutans level in an orthodontic patient with high caries risk

Abstract: Dental caries is established in the mouth long before it is clinically manifested as visible lesions. A patient's risk refers to the chance of losing mineral and organic structures of the dental crown. Although various factors affect caries expose, patients at high risk generally have elevated levels of Streptococcus mutans and poor oral hygiene. Orthodontic treatment tends to induce quantitative alterations in the buccal environment due the difficult of cleaning. Glass ionomer has been chosen as a bonding agent for the teeth with demineralization because of its ability to absorb fluoride form daily mouth rinsing, which can contribute to remineralization. However, in this protocol this was not apply to avoid interferences in the analysis. Emphasis should be placed on controlling dental plaque before the orthodontic appliances or aligners are placed. Because chemical plaque control is a coadjutant to mechanical control when this is not effective, and because of the difficulty of keeping patients motivated to perform proper oral hygiene, the purpose of this presentation is to report a protocol for treating orthodontic patients with a high risk of developing caries. The salivary level of Streptococcus mutans was evaluated during various stages of orthodontic treatment. It was significantly high before professional application of the protocol. Although there were no other changes in hygiene habits and diet, microbiologic tests showed that the microbiota was reduced and a reversal of the caries risk was observed. At the completion of orthodontic treatment, two years after the initial evaluation, integrity of the dental and periodontal structures was evident, besides some enamel surfaces showed signs of remineralization. The number of microorganisms levels were in balance during the follow-up periods of three and four years suggesting this procedure as effective.

Biography: Patrícia Valéria Milanezi Alves is highly accomplished dentist with 29+ years of expertise in General Dentistry, Orthodontics, Pediatric Dentistry, and Public Health. Holds a Master's and PhD degree in Orthodontic from Federal University of Rio de Janeiro – Brazil, with extensive research in craniofacial deformities, supported by international research fellowship in Craniofacial Deformities at University of Illinois and Rush Presbiterian Hospital, Chicago – USA. Skilled in 3D technology for diagnosis, treatment planning, and surgical reconstrution. She has published more than 15 papers in reputed journals, a book chapter, and has been serving as an editorial board member of Dental Press Journal of Orthodontics. She is the director of Orthodontic Department at Oromaxillofacial Residency Program at Santa Casa Hospital, Brazil.

ISBN: 978-1-917892-00-1