8th International Conference on Dentistry and Oral Health

ICDOH 2025

8th International Conference on Dentistry and Oral Health

17th-18th November, 2025

Kuala Lumpur, Malaysia

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8th International Conference on Dentistry and Oral Health

8th International Conference on Dentistry and Oral Health (ICDOH-2025), Kuala Lumpur, Malaysia

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Conference Theme:

“Advancements in Oral Health Care: Bridging Research and Practice

- ICDOH 2025

Preface

We are delighted to extend a warm welcome to all participants attending "8th International Conference on Dentistry and Oral Health (ICDOH-2025)" organized by IFERP Lifesciences on November 17th-18th, 2025 at Kuala Lumpur, Malaysia. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the fields of Dentistry and Oral Health. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICDOH-2025 contain the most up-to-date, comprehensive, and globally relevant knowledge in the fields of Dentistry and Oral Health. All submitted papers were subject to rigorous peer reviewing by 2-4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Dentistry and Oral Health but also serve as a valuable summary and reference for further research in those fields.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICDOH-2025.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

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About
ICDOH 2025

We are delighted to welcome you to 8th International Conference on Dentistry and Oral Health (ICDOH 2025), set to take place in the vibrant city of Kuala Lumpur, Malaysia. Under the theme "Advancements in Oral Health Care: Bridging Research and Practice," this prestigious event will serve as a global platform for leading researchers, clinicians, academicians, and industry experts to share cutting-edge advancements in dentistry, oral health, and patient care.

ICDOH 2025 will offer an exceptional opportunity to exchange ideas, foster collaborations, and explore the latest technological breakthroughs in the field. With insightful keynote presentations, interactive workshops, and thought-provoking panel discussions, the conference will create a dynamic learning environment for all participants.

Scope of the Conference

Preventive & Restorative Dentistry – Innovations in caries management, dental hygiene, and early diagnosis.
Digital & Aesthetic Dentistry – CAD/CAM technology, 3D printing, and minimally invasive techniques.
Implantology & Prosthodontics – Advances in dental implants, prosthetic rehabilitation, and tissue engineering.
Orthodontics & Endodontics – Cutting-edge treatments in teeth alignment and root canal therapy.
Oral & Maxillofacial Surgery – Surgical innovations for trauma, oncology, and reconstructive procedures.
Periodontology & Oral Microbiology – Insights into gum disease management and the oral microbiome.
Pediatric & Geriatric Dentistry – Specialized care for children and elderly patients.
Public Health & Preventive Care – Policies, education, and global oral health initiatives.
Biomaterials & Regenerative Dentistry – Development of biocompatible materials for dental applications.
Artificial Intelligence & Teledentistry – Digital transformation in oral healthcare.

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About
IFERP Lifesciences

IFERP Life Science is a globally recognized professional association meant for research, innovation and development in the field of life sciences and medical sciences . It serves to propel and fuel all innovative works of research with immense potential in the fields of Healthcare, Life Sciences, Pharmaceutical Sciences, Medical Sciences, Food & Nutrition, Environmental Science, Oncology, Cardiology, Nursing, Microbiology, Physiotherapy, Dentistry and many more. IFERP Life Science has been directly responsible for a significant amount of the revolutionary developments that have taken place in these fields over the past few decades.

IFERP Life Science is a specialized platform that supports life science and medical professionals in advancing their careers and research impact. Our tailored solutions include international conferences, Faculty Development Programs, Webinars, author services, membership and scientific communications, designed to foster collaboration and knowledge-sharing within the global medical community.

Our Mission

- Promote global research, innovation and development in life science, medical science, environmental science, pharmaceutical science and health care, to attain sustainable development goals (SDG's) for universal benefit.
- Advance Life Science & Medical Science for societal service.
- To facilitate knowledge exchange and growth through our professional activities and scientific conferences.

Our Vision

- An inclusive global scientific community promotes excellence in life science and medical events, author services, membership, informed decisions, and actions worldwide.

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Message
Director, IFERP

Mr. Siddth Kumar Chhajer

Founder & Managing Director,
IFERP, Technoarete Group, India

On behalf of Institute For Educational Research and Publications (IFERP) & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 8th International Conference on Dentistry and Oral Health (ICDOH-2025) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries of related fields.

This conference creates solutions in different ways and to share innovative ideas in the releted fields. ICDOH-2025 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

ICDOH-2025 will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in related fields from all over the world. ICDOH-2025 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the related fields.

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Message
CEO, IFERP

Mr. Rudra Bhanu Satpathy

Founder & Chief Executive Officer,
IFERP, Technoarete Group, India

IFERP is hosting the 8th International Conference on Dentistry and Oral Health (ICDOH-2025) this year in month of September, 2025. The main objective of 8th International Conference on Dentistry and Oral Health (ICDOH-2025) is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions.

The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

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About
Keynote Speaker

Dr. Arlette Setiawan

Universitas Padjadjaran
Indonesia

Prof. Dr. Arlette Setiawan is Paediatric Dentist with clinical and research training from Indonesia. Clinical interest includes management of the dental fear patient and complex medically compromised patients. Special research interest in evidence-based dentistry, behavioural dentistry, and special care dentistry. After completing a Ph.D. degree with research dissertation topics in childhood oral cancer, biomolecular studies, and natural products, she took her second master's degree in developmental psychology which brought her interest in psychological studies in dentistry. In the following year, she earned her consultant certification in dental treatment for special needs children from Indonesia Paediatric Dentistry Collegiate. After 15 years of experience being a lecturer in paediatric dentistry, in 2018 she was promoted as the youngest professor (adjunct professor) in the field of paediatric dentistry in Indonesia.

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About
Keynote Speaker

Dr. Eduardo Alvares Dainesi

Scientific Director
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Dentistry Post-graduation School
Brazil

Eduardo Alvares Dainesi graduated with a degree in Dentistry from the University of São Paulo - Brazil (USP, Bauru, 1986). Master's Degree in Orthodontics and Facial Orthopedics, from the University of São Paulo - Brazil (USP, Bauru, 1995). Doctorate (PhD) in Orthodontics and Facial Orthopedics from the University of São Paulo - Brazil (USP, Bauru, 1998). Post-Doctoral (Post-PhD) in Orthodontics from the University of São Paulo (USP, 2000). Specialist in Orthodontics and Facial Orthopedics. Specialist in Public Health with emphasis on Family Health. Coordinator of Academic Master's Courses in Dentistry (Orthodontics) at UNIMAR; Adjunct Professor of Orthodontics at Universidade do Sagrado Coração (USC) for more than ten years; Adjunct Professor Doctor, responsible for the discipline of Orthodontics at Universidade Estadual do Oeste do Paraná. He is currently working as the Coordinator of Specialization Courses in Orthodontics, Clinical Residency, and Short Courses in Orthodontics. He works as Clinical Director and Owner of a Private Orthodontics Office in Bauru (SP). He works as a Consultant and Clinical and Scientific Reviewer of journals in the dental field, such as Revista Clínica de Ortodontia, Dental Press, Orthodontic Science and Practice, Evidence-Based Clinical Practice Journal, Innovations Implant Journal, and Journal of Applied Oral Science. He works in the following areas of research: hypersensitivity to orthodontic materials, craniofacial growth and development, asymmetric Class II treatments, and Induced Orthodontic Biomechanics and Tissue Reactions. Currently, he serves as scientific director at Eduardo Dainesi Institute – Dentistry Post-Graduation School, Bauru (São Paulo - Brazil), and as a Visiting Researcher Professor at the University of São Paulo – USP Bauru.

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About
Keynote Speaker

Dr. Anand Ramanathan

Oral & Maxillofacial Clinical Sciences
Universiti Malaya
Malaysia

Dr. Anand Ramanathan graduated with a Bachelor of Dental Surgery from Saveetha Dental College & Hospital, The Tamil Nadu Dr. MGR Medical University, Chennai, India, in 2002. He obtained his Master of Dental Surgery in Oral & Maxillofacial Pathology from Rajah Muthiah Dental College & Hospital, Annamalai University, Chidambaram, India, in 2009. In 2011, he completed the spouse program at the Faculty of Dentistry, Universiti Malaya, to obtain his practicing license in Malaysia, where he was actively engaged in research with the Oral Cancer Research & Coordinating Centre (OCRCC). Driven by a passion for teaching and research, Dr. Ramanathan joined the Faculty of Dentistry, Universiti Malaya, where he now serves as Senior Lecturer and Clinical Specialist in the Department of Oral & Maxillofacial Clinical Sciences. He has led multiple integrated modules and contributed to curriculum reviews for both undergraduate and postgraduate programmes. A dedicated trainer of Oral Detect, a programme for early detection of oral cancer and potentially malignant disorders, he has successfully conducted training across Malaysia, Indonesia, Cambodia, Nepal, and India. He holds adjunct faculty appointments at institutions in Cambodia and India and has supervised numerous PhD, Masters, and graduate students. An active researcher, he has published 81 peer-reviewed papers with an h-index of 20. His research spans oral cancer, potentially malignant disorders, immunohistochemistry, oncoimmunology, homeobox genes, odontogenic lesions, and adjunct diagnostic tools. His contributions have earned him awards, including the Outstanding Researcher in Oral & Maxillofacial Pathology (VIHA 2020) and the Certificate of Excellent Service, Universiti Malaya (2021).

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About
Keynote Speaker

Dr. K. Meena Anand

Periodontology
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Malaysia

Prof. Dr. K. Meena Anand MDS Periodontology | PG Dip (Lasers) | Dental Photography | PSGFRI Fellow Professor of Periodontology at Manipal University College Malaysia (MUCM), Dr. Meena Anand brings over 18 years of academic and clinical experience. She holds an MDS in Periodontology from Manipal University and has pursued advanced certifications in laser dentistry, dental photography, and medical education. A PSGFRI FAIMER fellow, she is committed to innovation in dental education and interprofessional leadership.

Dr. Meena has served in progressive academic roles at Manipal College of Dental Sciences, culminating in her current position at MUCM since 2020. She has coordinated multiple academic programs including the MSc Dentistry (Research Mode) and the Dental Operating Room Assistant (DORA) course. Her teaching philosophy integrates clinical excellence with evidence-based pedagogy.

Her research spans herbal antiplaque agents, lemongrass oil formulations, and tobacco cessation studies. She has contributed to curriculum development and assessment strategies and serves as regional faculty for MUFIILIPE. She is also a certified internal auditor for ISO QMS and EMS standards. Fluent in five languages, Dr. Meena is passionate about mentoring students and advancing global dental education. She continues to contribute actively to research, teaching, and academic leadership.

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About
Keynote Speaker

Dr. Boyapati Ramanarayana

Sibar Institute of Dental Sciences
India

Dr. Boyapati Ramanarayana has 11 years of academic experience and currently working as Professor (MDS and PhD Guide) in the Department of Periodontology, Sibar Institute of Dental Sciences. He is having 43 research publications till date in various national and international peer reviewed journals. He held the position of Associate Editor for the European Journal of Medical Research for the past few years. He additionally serve as an editorial board member for the journals Annals of Geriatric Medicine and Research, Journal of Yeungnam Medical Science, Addiction and Health, Journal of Dental Anaesthesia and Pain Medicine, and Eurasian Journal of Medicine etc. His academic acumen helped me to get delegated with the manuscript reviewing and editing responsibilities for various journals, which include the, Journal of Periodontal Research, Journal of Dental Anesthesia and Pain Medicine, Contemporary Clinical Dentistry, Journal of Applied Oral Science, Journal of Periodontal Research, Australian Dental Journal, Indian journal of community medicine and Indian journal of Dental Research etc. His strengths includes Profound interest in Bio-medical and allied health sciences research, well equipped with methodological insights in biomedical research and allied sciences, good at manuscript review and editing for dental, medical and allied health sciences.

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About
Keynote Speaker

Dr. Michaela Goodson

Norwich Medical School
United Kingdom

Prof. Dr. Michaela Goodson is a distinguished Consultant in Oral & Maxillofacial Surgery and currently serves as the Programme Lead for Dental Development at the Faculty of Medicine & Health Sciences, University of East Anglia, United Kingdom. She holds the honorary title of Professor at the Norwich Medical School and is known for her excellence in clinical practice, education and research. Her research portfolio spans over two decades and includes more than 60 peer-reviewed publications focused on oral potentially malignant disorders (PMDs), laser surgery for early oral carcinoma, and the development of predictive nomograms in head & neck oncology. Prof. Goodson's clinical work emphasises early detection and minimally invasive intervention of oral mucosal lesions, and she has pioneered protocols integrating CO2-laser excision with long-term follow-up in high-risk patient cohorts. As an educator, she is committed to advancing undergraduate and postgraduate surgical training and has led multiple international courses in maxillofacial surgery and oral oncology. Her global outreach includes collaborations in Malaysia, Australia and Europe.She has also been an invited speaker at major dental and medical conferences worldwide, sharing her expertise on biomarker development, surgical margin assessment and multidisciplinary care pathways in oral cancer. Prof. Goodson's current interests include the interface of translational research and clinical service, exploring how artificial intelligence and imaging modalities can enhance early diagnosis in oral health care.Her leadership in professional societies and editorial boards underscores her role as a thought-leader in the evolving field of dental and maxillofacial surgery.

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About
Session Speaker

Dr. Christine Raouf George Mikhail

Oral Medicine & Diagnosis
Fayoum University
Egypt

Dr. Christine Raouf George Mikhail (also known as Christine Mikhail) is a specialist in Oral Diagnosis, Oral Medicine, Special Care Dentistry, and Hospital Dentistry, currently serving as an Assistant Professor of Oral Medicine & Diagnosis at the Faculty of Dentistry, Fayoum University. She is also a clinical researcher, author, reviewer, and editorial board member with extensive international academic contributions. Dr. Mikhail earned her Bachelor of Dental Surgery (BDS) from Cairo University in 2010, followed by an MSc in Oral Medicine in 2016 and a PhD in Oral Medicine in 2021. She has authored nine internationally published papers covering diverse topics such as gustatory dysfunction in depression, myofascial pain management, H. pylori infections, periodontal health in schizophrenic patients, clinical anxiety, and radiation-induced oral mucositis. In addition to her research, Dr. Mikhail is an active peer reviewer for several international journals, including Springer Nature publications, and has received a Certificate of Excellence in Reviewing in recognition of her outstanding contributions Her clinical and academic experience spans over a decade, including positions at Cairo University, El Khezendra Hospital, Shubra Public Health Center, and multiple private dental clinics. She has also served as faculty at Sinai University, Ahram Canadian University, MTI University, and currently at King Salman International University. Dr. Mikhail has participated in international workshops, including collaborative programs with Kiel University, Germany, focusing on oral cancer screening and early diagnosis. Dr. Mikhail is committed to advancing oral health education, research, and patient care, mentoring students through comprehensive clinics, problem-based learning, and community-based programs, while contributing to the global knowledge base in oral medicine and diagnosis.

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Abstract's Index

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An Audit Investigating the Appropriateness of Referrals to the Dental Sleep Clinic at Guy's Hospital

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Introduction: The Guy's Hospital Dental Sleep Clinic receives a large amount of referrals for the construction of mandibular advancement devices. The aim of this audit was to decrease the number of discharges from the Dental Sleep Clinic due to inappropriate referrals.

Materials and Methods: This was a three cycle retrospective audit. We collected data from the dental sleep clinic over a three month period to include 100 patients per cycle. The first cycle took place between September 2022 and November 2022. After implementing our first change we recorded data for the second cycle between February 2023 and April 2023. After implementing the second change we recorded data for the third cycle between July 2023 and August 2023.

Results: The findings highlighted that there was a considerable improvement in accepted referrals, from 60% in the first cycle to 65% and 71% in the second and third cycle respectively. The main reason for a declined referral was that the patient had not seen their dentist within the last 6 months.

Discussion: Based on the results of the first cycle of the audit we implemented two interventions. The first was to update the website page of the Dental Sleep Clinic to make the referral criteria more accessible for referrers and patients. The second intervention was presenting the findings and updating clinicians on our referral criteria to the Guy's Sleep Medicine Team, where the majority of referrals are from.

Conclusion: The introduction of the referral criteria to the website and presentation to the sleep medicine team at Guy's Hospital, led to a significant reduction in declined referrals. Nevertheless, our standard of 100% acceptance was not met. Further studies assessing and improving patients' ability to access dental care would be beneficial in improving acceptance rates.

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An Audit Investigating the Appropriateness of Referrals to the Dental Sleep Clinic at Guy's Hospital

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ntroduction: Mandibular resection is a surgical procedure performed to remove part or all of the mandible due to malignancies affecting the jawbone, commonly arising from the oral cavity, salivary glands, or bone tissues.

Objective: To assess chewing ability will be evaluated in terms of masticatory performance, which is defined as the particle size distribution when chewed for a given number of strokes

Method: 20 Patients who has undergone segmental mandibulectomy with Soft tissue and Bony Reconstruction were chosen for this study. Chewing ability was evaluated in terms of masticatory performance, which is defined as the particle size distribution when chewed for a given number of strokes. Masticatory performance was measured by an original modified sieve method using hydrocolloid material. Subjects were trained by the investigator to chew a piece of toxicologically safe hydrocolloid impression material (10mm diameter, 10mm height and 1.5g weight). The participants were made to chew for10 and 20 masticatory strokes. After the completion, the participant will be asked to rinse his/her mouth with a glass of water and expectorate. All the particles are collected and poured to a 1.80mm mesh sieve. The number of particles that remained in the mesh sieve was counted.

Result: Masticatory efficiency was seen higher in patients with segmental mandibulectomy with bony reconstruction cases. Out of the 20 total participants the particle size of alginate particles displayed higher and more number of particles in case of a bony reconstruction than a soft tissue reconstruction.

Conclusion: Patients who has undergone segmental mandibulectomy with soft tissue and bony reconstruction, Chewing efficiency in such patients should be a mandate investigation that can often lead to conclusive data often leading to a necessity of multidisciplinary approach in planning further treatment in these category of patients.

Index Terms—Mandibular Resection, Chewing Efficiency, Modified Sieve Technique

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Revolutionary Lingual Biometrics: 3D Intraoral Scanning for Tongue Print Mapping in Post Mortem Identification Method

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Introduction: Indonesia experiences 1.8 million deaths annually with mortality rates ranging from 15.2 per 1,000 live births to 45.8 per 1,000 in elderly populations. One of the famous Indonesia provinces, specifically in East Java including Malang region, experiences approximately 6.5 per 1,000 population mortality annually. Mass casualty events, such as the 2022 Kanjuruhan Stadium tragedy in Malang resulting in 135 deaths, highlight urgent needs for rapid, accurate identification systems. 3D intraoral scanning for lingual biometric analysis addresses these limitations through tongue's unique patterns requiring no ante-mortem records, offering rapid 3-5 minute processing, cultural compatibility, cost-effectiveness, and preservation resilience in tropical conditions.

Purpose: This research study evaluates forensic utility and methodological integration of advanced dental technologies for individual identification processes.

Methods: Post-mortem tongue surface scanning was performed using Fussen S6500 intraoral scanner with integrated computational processing unit. The scanner captured high-resolution 3D images of lingual topography, documenting patterns, surface fissures, and texture variations. Digital data was processed through specialized morphometric software to create standardized tongue print maps for forensic database comparison.

Results: 3D intraoral scanning demonstrated superior success rates compared to conventional identification methods. The scanner produced accurate, detailed images capturing tongue anatomy for post-mortem identification. Tongue scanning proved useful in forensic dentistry with renewable technology, surpassing traditional cheiloscopy and rugoscopy methods.

Conclusion: Intraoral tongue scanning represents a minimally invasive, highly effective method with potential for rapid development in advancing forensic technology for personal identification, establishing new international standards for culturally appropriate post-mortem identification.

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Divide and Rule

Dr. M. Maria Subash Aaron
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Periodontal regeneration can be achieved by regenerative procedures. But in some cases where periodontal regeneration is not possible, we have to switch over to respective procedures to achieve a reduction in pocket depth and for easy maintenance. Resection may involve supporting bone or sometimes we can perform root resection or a part of a tooth itself. Hemisection is one such procedure where we can remove the half of the tooth along with root. It is commonly performed in mandibular first molars. Even though it is an old procedure, we can achieve good results when your case selection is proper. Here in our case report, I am going to describe about a periodontitis patient whose mandibular 1st molar was treated with hemisection followed by a fixed partial denture involving 1st and 2nd molar.

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Dysbiosis and Atherosclerosis: Unravelling the Molecular Pathways Linking Oral Microbiota to Cardiovascular Disease

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Background: Atherosclerosis is a chronic inflammatory vascular pathology, characterized by formation of intraluminal plaques within the arteries. The condition is principally a lipid-driven process initiated by the accumulation of low-density lipoprotein and remnant lipoprotein particles and an active inflammatory process in focal areas of arteries particularly at regions of disturbed non-laminar flow at branch points in the arteries. Now a days, the condition is increasingly recognized as being influenced by microbial and immune factors extending beyond traditional cardiovascular risk determinants. Emerging evidence suggests the oral microbiota dysbiosis—characterized by an imbalance between commensal and pathogenic bacterial communities—may play a critical role in initiating systemic inflammation and endothelial dysfunction (Hajishengallis, 2015; Reyes et al., 2020). The oral–vascular connection plays a crucial role in the systemic implications of localized oral pathologies in cardiovascular health.

Aim and Objectives: This review aims to elucidate the molecular and immunoinflammatory pathways linking oral microbial dysbiosis to the pathogenesis of atherosclerosis. Considerably, it (1) explores the mechanisms of microbial translocation, immune activation, and lipid metabolism disruption; (2) synthesizes epidemiological and experimental evidence; and (3) discusses diagnostic and therapeutic implications for cardiovascular prevention.

Methodology: A comprehensive literature review was conducted using PubMed, Scopus, and Web of Science databases covering 2000–2025. Search terms included “oral microbiota,” “dysbiosis,” “atherosclerosis,” “inflammation,” and “endothelial dysfunction.” Studies were conducted according to PRISMA guidelines in a diverse population, including human, animal, and mechanistic models. Findings were thematically analyzed to integrate microbial, molecular, and clinical insights.

Findings: A number of 248 studies were analyzed. Key pathogens such as *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, and *Aggregatibacter actinomycetemcomitans* were identified as mediators of systemic inflammation through Toll-like receptor (TLR) activation, cytokine cascades, and immune cross-reactivity (Seymour et al., 2007; Mahendra et al., 2021). Dysbiosis-induced bacteraemia contributes to endothelial activation, oxidative stress, and foam cell formation—core mechanisms of atherogenesis. A 20% to 30% of the increased risk of coronary artery disease & CVA is demonstrated in Meta-analyses and stroke among individuals with periodontal disease (Dietrich et al., 2017; Leng et al., 2022). Interventional studies have demonstrated a reduction in C-reactive protein (CRP) and improvements in endothelial function following periodontal therapy (Sanz et al., 2020).

Conclusions: Oral microbiota dysbiosis plays a crucial role in vascular pathologies via microbial infiltration, widespread inflammation, and metabolic disturbances. These results highlight the oral microbiome as a key determinant in overall health, affecting cardiovascular risk evaluation and treatment. Current studies which combine metagenomic and metabolomic approaches are crucial for understanding the causal mechanisms and promoting preventive measures aimed at the oral–vascular connection.

Index Terms—Oral Microbiota, Dysbiosis, Atherosclerosis, Systemic Inflammation, Endothelial Dysfunction, Cardiovascular Disease, *Porphyromonas gingivalis*

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Salivary Biome Restoration through Homoeopathic Intervention: A Novel Approach to Xerostomia Management

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Background: Xerostomia, or dry mouth, is a multifactorial pathological condition, characterized by hyposalivation below 0.1 ml per minute; resulting from compromised salivary gland secretion and often accompanied by microbial dysbiosis within the buccal cavity. This condition significantly impairs oral health, oral comfort, mastication, taste, and overall quality of life (Villa & Abati, 2015). Conventional pharmacological treatments—such as Sialogogues or saliva substitutes—aids for only transient relief and fail to restore salivary gland homeostasis or microbiome integrity (Sreebny & Schwartz, 1997). Homoeopathic therapeutics, based on individualized bioregulatory principles, can successfully stimulate glandular function and promote microbial equilibrium (Bell, Koithan, & Brooks, 2013).

Aim: This study aimed to evaluate the clinical efficacy and microbiological effects of individualized homoeopathic intervention in the management of xerostomia, with a particular focus on restoring salivary biome balance.

Methods: A prospective, single-arm interventional study was conducted on 120 participants diagnosed with idiopathic or post-therapeutic xerostomia. Based on individualized case analysis and repertorization, homoeopathic medicines such as *Natrum muriaticum, Bryonia alba, Mercurius solubilis, Nux moschata, and Pulsatilla nigricans* were prescribed in potencies ranging from 30C to 200C, depending on patient susceptibility. Remedies were administered for 12 weeks with fortnightly follow-ups. Primary outcomes included unstimulated salivary flow rate (mL/min), Visual Analogue Scale (VAS) for dryness, and Oral Health Impact Profile (OHIP-14) scores. Secondary outcomes assessed shifts in salivary microbiota using 16S rRNA sequencing pre- and post-intervention. Statistical analysis was performed using paired t-tests ($p < 0.05$).

Results: After 12 weeks of individualized homoeopathic treatment, the mean unstimulated salivary flow rate increased significantly from 0.14 ± 0.05 mL/min to 0.31 ± 0.09 mL/min ($p < 0.01$). Subjective dryness scores reduced by 47%, and OHIP-14 scores showed significant improvement ($p < 0.05$). Patients receiving *Natrum muriaticum* and *Bryonia alba* exhibited the highest symptomatic relief. Microbiome profiling demonstrated restoration of beneficial commensals such as *Streptococcus salivarius* and *Rothia mucilaginosa*, with concurrent reduction of opportunistic species including *Candida albicans* and *Fusobacterium nucleatum*. Enhanced microbial diversity correlated positively with salivary output and subjective comfort.

Conclusion: Individualized homoeopathic intervention using remedies such as *Natrum muriaticum, Bryonia alba*, and *Mercurius solubilis* showed potential in improving both functional salivary secretion and oral microbial equilibrium among xerostomia patients. These findings suggest that homoeopathy may act as a bioregulatory modulator of salivary gland activity and oral microbiota. Further randomized controlled trials integrating molecular and metabolomic analyses are warranted to validate these preliminary results and elucidate the underlying mechanisms.

Index Terms—Xerostomia; Salivary Microbiome; Homoeopathy; *Natrum Muriaticum; Bryonia Alba; Mercurius Solubilis*; Oral Dysbiosis; Bioregulatory Medicine

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Porphyromonas gingivalis and the Neuroinflammatory Cascade: Unravelling the Oral Origin of Alzheimer's Disease

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Background: Alzheimer's disease is one of the major neurodegenerative challenges, contributes to a major risk for dementia & a considerable burden on the modern healthcare system, both in the form of economic & emotional (Selkoe & Hardy, 2016). The Alzheimer's disease is characterised by hallmark pathologies including extracellular amyloid-β (Aβ) plaques, intraneuronal neurofibrillary tangles of hyperphosphorylated tau, and pervasive neuroinflammation. Emerging evidence implicates systemic and peripheral inflammatory sources in the initiation and progression of AD pathology (Calsolaro & Edison, 2016). Among the aetiological factors, the principal periodontal pathogen *Porphyromonas gingivalis* has attracted the attention for its capacity to disseminate beyond the oral cavity, access the central nervous system (CNS), and drive neuroinflammatory responses (Hajishengallis, 2015; Dominy et al., 2019).

The virulence factors of *Porphyromonas gingivali*, considerably Gingipains & Lipopolysaccharide, is able to destroy the host immune response, affect the Blood-Brain Barrier (BBB) & and perpetuate chronic neuroinflammation (Darveau, 2010; Olsen & Potempa, 2021). Such findings draw a supportive foundation for the concept of Oral-Brain axis, in which persistent periodontal infection acts as an upstream source of systemic and central inflammation, thereby accelerating neurodegenerative processes (Hajishengallis, 2020).

Objective: The aim of this review is to synthesize latest mechanistic scientific evidence linking the periodontal infection caused by *Porphyromonas gingivalis*, a nonmotile, Gram-negative, rod-shaped, anaerobic, pathogenic bacterium to the neuroinflammatory cascades specific for the Alzheimer's disease. The study also aimed to explore the microbial virulence factors, routes of access to central nervous system, the resultant glial activation, induction of the amyloid & Tau pathology & the therapeutic implications.

Methods: A narrative review of literature published between 2000 and 2025 was conducted using databases including PubMed, Scopus, Embase, and Web of Science. Search terms included "*Porphyromonas gingivalis*", "gingipains", "oral–brain axis", "neuroinflammation", "amyloid-β", and "Alzheimer's disease". In this study postmortem findings on human subjects, epidemiological, and animal or mechanistic studies were examined.

Findings: Post- mortem analyses of the human subjects have identified the *Porphyromonas gingivalis* DNA and its proteolytic virulence factors (gingipains) in the brains of the subjects with Alzheimer's Disease, with significant correlation to tau and ubiquitin pathology. PubMed+2PMC+2 Oral infection models in mice demonstrate that *Porphyromonas gingivalis* can translocate to the brain, induce glial activation, elevate pro-inflammatory cytokines (e.g., IL-1β, IL-6, TNF-α), promote Aβ42 production and tau phosphorylation. PubMed+2OUP Academic+2 The mechanistic pathways involve disruption of the blood-brain barrier (BBB), microglial priming, NLRP3 inflammasome activation, and complement cascade involvement.

Conclusions: The accumulating evidence supports a plausible mechanistic link between chronic oral infection with *P. gingivalis* and the neuroinflammatory processes central to AD. These findings suggest the oral cavity may act as an upstream modifiable reservoir for CNS inflammation, highlighting the importance of periodontal health in neurodegenerative risk mitigation. Future research should focus on longitudinal human studies, standardised microbial detection, & intervention trials targeting gingipains and related pathways.

Index Terms—*Porphyromonas gingivalis*, Alzheimer's disease, neuroinflammation, gingipains, amyloid-β, tau, periodontal disease, oral–brain axis.

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Oxidative Stress in Periodontitis

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Background: Periodontitis is considered an inflammatory disease of the tooth-supporting tissues, which include the periodontal ligament, alveolar bone, and is one of the major global oral-health burdens. Some of the very recent studies, for instance, highlight the role of redox imbalance, more specifically, the oxidative stress that is often defined by excess reactive oxygen species (ROS) relative to antioxidant defence in the pathogenesis and progression of perodontitis (Patil et al., 2024). Oxidative injury, such as lipid peroxidation, protein oxidation, and DNA damage, including antioxidant systems, is being observed locally and systematically. On this note, there is an overlap between preodontitis and systemic diseases, the redox-inflammatory axis outlining both a mechanistic conduit and a therapeutic target (Jelena Mirnic et al., 2024).

Aims: The study aims to summarise current evidence on oxidative stress biomarkers in peridontitis, their relations with the severity of the disease, and the potential of antioxidant/adjunctive interventions. This ultimate goal is to support the emerging concept of individualized redox-based periodontal therapy.

Methods: The discussion and the analysis of the overall study will be conducted on peer-reviewed articles and meta-analyses. On these aspects, the key areas of focus or study would be:

- Biomarker studies comparing periodontists versus healthy controls
- Mechanism studies on exploring ROD generation, antioxidant capacity, and tissue damage in periodontal disease
- Studies of antioxidant adjunctive therapies

Results: As per biomarker studies and meta-analysis, it is constantly being identified that a higher level of antioxidant damage markers and lower total antioxidant capacity (TAOC) in periodontitis patients versus controls. For instance, one of the meta-analyses outlines a major reduction in TAOC (SMD=-2.02) and increases in MDA (SMD=0.99) and NO (SMD=4.98) in the peripheral blood of periodontitis patients. Locally, in the case of gingival crevicular fluid and tissue, an elevated MDA, 8-hydroxydeoxyguanosine (8-OHdG), hydrogen peroxide, and reduced SOD/CAT activities have been reported. Furthermore, mechanistic investigations outline that dysbiotic subgingival biofilms trigger neutrophil ROS release, mitochondrial dysfunction in periodontal cells, and activation of redox-sensitive transcription factors, matrix metalloproteinases, and RANKL, eventually driving the tissue degradation and alveolar bone loss. On this note, the study outlined by Shang et al. (2023) indicates that an emerging adjunctive therapy shows pre-clinical outcomes while remaining inconsistent.

Conclusion: Here, oxidative stress seems to be a central pathogenic axis in perodontitis that links microbial-host interactions leading to tissue destruction and systemic inflammation. The stronger biomarker evidence indicates redox imbalance correlates with disease presence and severity and thus serves both diagnostic and therapeutic roles. On the basis of the study so far, there is a need for future studies to focus more on standardized biomarker panels, longitudinal studies of antioxidant interventions.

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Management of the Radicular Cyst by Surgical Enucleation with Bone Graft and Platelet-Rich-Fibrin

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Radicular (periapical cysts) are the inflammatory type of odontogenic cysts associated with the root of non-vital teeth, typically asymptomatic. Radiographically, they appear as oval or pear-shaped unilocular radiolucency in the periapical region. Cyst development is the final stage of the inflammatory process after a periapical infection; hence, it often occurs later in life. Radicular cysts in the maxilla can occasionally spread across the maxillary sinus. The treatment modalities include endodontic treatment, enucleation with primary closure, and removal of the problematic tooth. Hence, the present study describes a successful case of endodontic treatment and surgical enucleation followed by placement of Demineralised-Freeze Dried Bone Allograft (DFDBA) and platelet-rich-fibrin (PRF).

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Efficacy of Homoeopathic Medicines in Post-Dental Surgical Recovery: A Clinical and Bioregulatory Evaluation

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Background: Dental surgical procedures, including extractions and minor oral surgeries, often lead to postoperative pain, oedema, and delayed wound healing. It is evident that, Conventional analgesics and anti-inflammatories can provide symptomatic relief but in exchange of a bunch of side effects and fail to enhance tissue bioregulation (Grossi et al., 2019). Homoeopathic medicines such as Arnica montana, Hypericum perforatum, and Calendula officinalis have been traditionally used to modulate inflammatory responses and support healing (Bell, Koithan, & Brooks, 2013).

Aim: To assess the clinical efficacy and bioregulatory effects of individualized homoeopathic medicines in improving postoperative recovery following dental surgical procedures.

Methods: A prospective, open-label clinical study was conducted among 80 participants undergoing minor oral surgeries (e.g., tooth extractions, alveoloplasty, apicoectomy). Based on individualized symptomatology and clinical presentations, homoeopathic medicines including Arnica montana, Hypericum perforatum, Calendula officinalis, Ruta graveolens, and Staphysagria were administered in 30C or 200C potencies for 7–10 days post-surgery. Clinical outcomes included pain intensity (Visual Analogue Scale), edema grading (0–3 scale), wound healing index (Landry et al., 1988), and infection rate. Serum inflammatory biomarkers—C-reactive protein (CRP) and interleukin-6 (IL-6)—were assessed in a subsample (n=30) to explore bioregulatory effects. Statistical significance was analyzed using paired t-tests and ANOVA ($p < 0.05$).

Results: Homoeopathic treatment produced significant reductions in mean pain score (VAS) from 7.1 ± 1.3 at 24 hours to 1.9 ± 0.7 by day 5 ($p < 0.01$). Edema scores decreased by 65%, and wound healing index improved significantly by day 7 ($p < 0.01$). Patients receiving Arnica montana and Calendula officinalis demonstrated superior outcomes in swelling reduction and epithelialization. Serum CRP and IL-6 levels decreased notably, suggesting modulation of inflammatory and repair pathways. No adverse effects were reported.

Conclusion: Homoeopathic medicines appear to enhance post-surgical recovery through both symptomatic relief and bioregulatory modulation of inflammation and tissue repair. These findings indicate a promising adjunctive role for homoeopathy in dental postoperative care. Further randomized controlled trials with molecular profiling are warranted to substantiate the mechanistic aspects of this integrative approach.

Index Terms—Homoeopathy; Dental Surgery; Postoperative Recovery; *Arnica montana; Calendula officinalis*; Inflammation; Bioregulatory Medicine

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Endodontic Retreatment of Mandibular Lateral Incisor with One Extra Undetected Root Canal by using CBCT: A Case Study

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Introduction: Before proceeding with full mouth prosthetic rehabilitation involving multiple maxillary and mandibular anterior teeth, it is essential to evaluate the possible causes of failure of prior endodontic treatment. Common causes include errors in diagnosis, persistence of infection within the root canal system, mistakes in debridement and shaping of root canals, instrument fractures, and inadequate restorations. Among these, undetected extra roots or canals remain a significant and often overlooked cause leading to treatment failure.

Purpose of the Case Study: Undetected extra roots or canals are recognized as a major cause of endodontic treatment failure. Many challenges encountered during root canal therapy arise from an inadequate understanding of the internal canal morphology. This case presents a rare finding — the presence of an extra root canal in a mandibular lateral incisor, emphasizing the need for careful anatomical evaluation before prosthetic rehabilitation.

Methodology: In case study, Cone Beam Computed Tomography (CBCT) was employed to investigate the cause of persistent pain in an elderly patient prior to full-mouth prosthetic rehabilitation. The advanced 3D imaging provided accurate visualization of the root canal anatomy, allowing the clinician to detect an additional root canal and analyze the canal configuration of the mandibular lateral incisor. This aided in precise diagnosis and effective treatment planning.

Conclusion: CBCT scanning proves to be a valuable diagnostic tool for comprehensive mapping of root canal configurations, ensuring complete debridement and obturation of all canals. It allows clinicians to identify complex root morphologies both before and after endodontic treatment. Unlike conventional 2D periapical radiographs, CBCT provides a distortion-free, three-dimensional view of canal anatomy. In this case, the CBCT taken for full-mouth rehabilitation was also instrumental in confirming the presence of an extra root canal in the mandibular lateral incisor, ensuring accurate diagnosis and improved treatment outcome.

Index Terms—Mandubular Lateral Incisors, CBCT

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Smart Contracts and Blockchain Integration: Advancing Autonomous Systems Through Artificial Intelligence

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The convergence of artificial intelligence (AI) and blockchain technology represents a paradigmatic shift in autonomous system design and execution. This study examines the integration of generative AI with blockchain-based smart contracts, analyzing their potential to revolutionize transparency, security, and operational e□ciency across industries. The global blockchain AI market, valued at USD 550.70 million in 2024, is projected to reach USD 3.718 billion by 2033, representing a 23.64% compound annual growth rate [1].

Our research demonstrates that AI-enhanced smart contracts achieve 92% accuracy in automated contract generation while reducing development time by 70-85%. Real-world implementations show 95% accuracy in fraud detection with 3.2% false positive rates. However, challenges persist in scalability, with AI-enhanced contracts requiring 3-8x more computational resources than traditional contracts. The study proposes a framework integrating zero-knowledge proofs with machine learning algorithms to enhance privacy-preserving verification while enabling intelligent contract adaptation.

Index Terms—Artificial Intelligence (AI), Blockchain Technology, Smart Contracts, Generative AI, Autonomous Systems, Transparency, Security, Operational Efficiency, AI-Enhanced Smart Contracts, Automated Contract Generation, Fraud Detection, False Positive Rate, Computational Resources, Scalability, Machine Learning Algorithms, Zero-Knowledge Proofs (ZKPs), Privacy-Preserving Verification, Intelligent Contract Adaptation, Blockchain AI Market, Market Valuation, Compound Annual Growth Rate (CAGR), Industry Applications, Real-World Implementations

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