INTERNATIONAL COLLEGE OF PROSTHODONTISTS

London Symposium - Satellite Meeting

KING'S College LONDON London UK

ICP 2023

August 30 - September 2, 2023

PROGRAM BOOK

International College of Prosthodontists

www.icp-conference.com

www.icp-conference.com

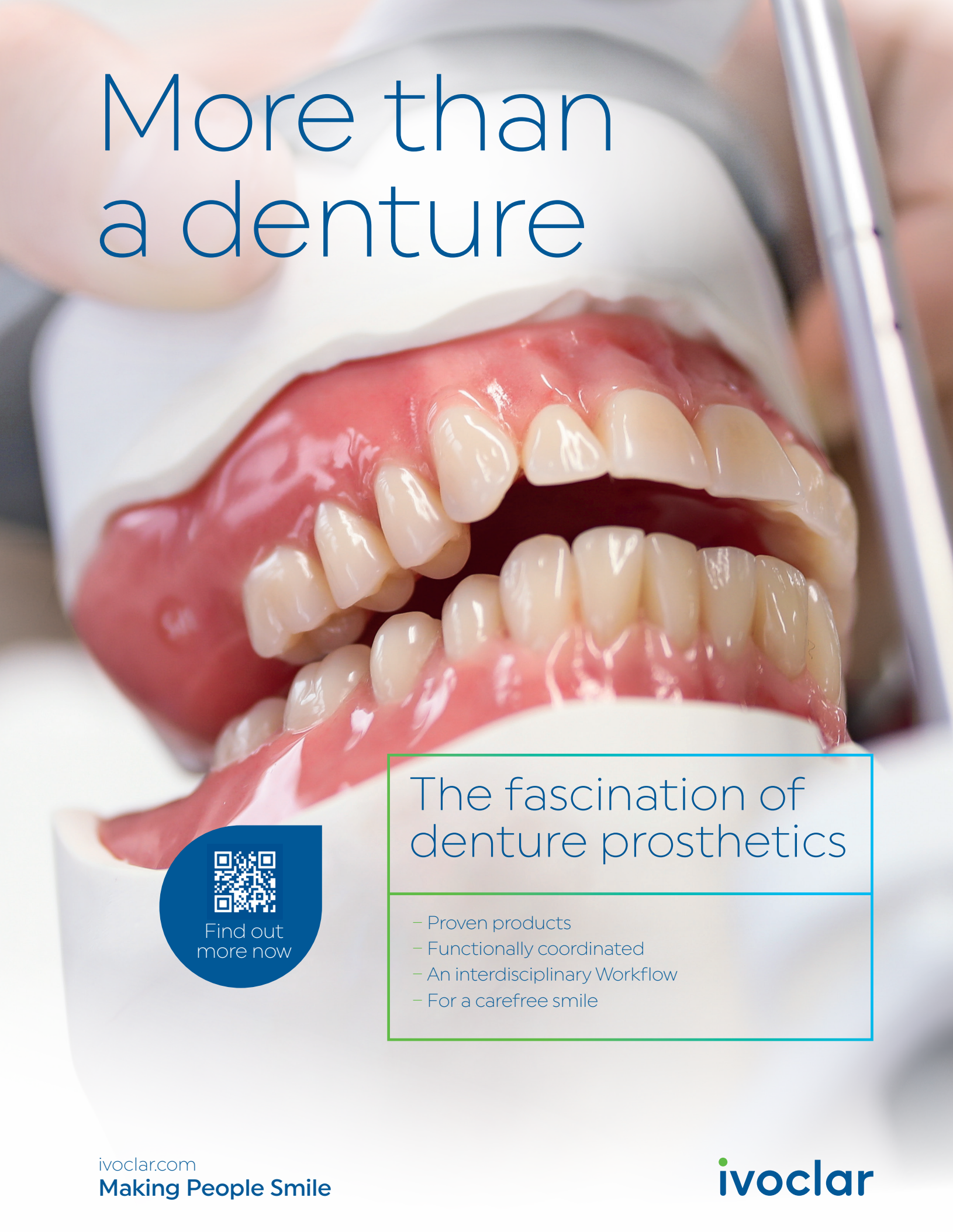
Welcome to the

International College of Prosthodontists London Symposium – Satellite Meeting

August 30 - September 2, 2023
King's College London

Table of Contents

International College of Prosthodontists
4425 Cass Street, Suite A
San Diego, CA 92109
Tel: 858 270-1811 Fax: 858 272-7687
Email: icp@icp-org.com
Web Site: www.icp-org.com



More than a denture

The fascination of denture prosthetics

- Proven products
- Functionally coordinated
- An interdisciplinary Workflow
- For a carefree smile

Find out more now

ivoclar.com
Making People Smile

ivoclar

Thinking ahead. Focused on life.

MORITA

Veraview X800

The New Frontier for Dental Imaging

The Veraview X800 is an all-in-one dental X-ray unit that produces stunning images for panoramic, cephalometric, and CBCT evaluation.

Development and Manufacturing
J. MORITA MFG. CORP.
680 Higashihama Minami-cho. Fushimi-ku, Kyoto-shi, Kyoto 612-8533. Japan
T +81. (0)75. 611 2141, F +81. (0)75. 622 4595

Distribution
J. Morita Corporation
3-33-18 Tarumi-cho. Suita-shi, Osaka 564-8650. Japan
T +81. (0)6. 6380 1521, F +81. (0)6. 6380 0585

Morita Global Website：www.morita.com

WELCOME TO THE ICP AT KING'S COLLEGE LONDON

Our first in-person conference since the pandemic is in London at Kings College London (Guy's Campus, next to the Shard) from the 30th of August to the 2nd of September 2023. Our scheduled location remains in Shanghai, China, but we realized the risks for many may mean an unwillingness to travel, but we hope that confidence will improve, and for many Chinese, it will remain the main 2023 venue.

London is one of the great world cities with great transport links and culture. For those who are not familiar with Kings College is in the heart of London, virtually on the Thames and close to Tower Bridge. The central location means we have an attractive venue and lecture theatres with large capacity within a university location.

We have a mix of international speakers: Terry Walton and Charlie Goodacre, with many from the USA and Canada, Europe, and Asia. We hope to encourage 200-300 delegates, maybe more. I very much look forward to welcoming you to London.

My very best,

David

Dr. David Bartlett
Center for Oral, Clinical and Translational Sciences
Prosthodontics, Faculty of Dentistry,
Oral & Craniofacial Sciences
King's College London
Guy's Hospital
London, United Kingdom

INVITATION TO JOIN THE ICP MEETING IN SHANGHAI, CHINA

ICP Shanghai 2023 is a highly significant academic conference, marking a pivotal event since the global pandemic. This conference provides an exceptional opportunity for engaging in direct in-person interactions with esteemed international specialists in the field of prosthodontics while offering the privilege to attend lectures delivered by prominent figures within this domain.

Scheduled to take place from the **14th to the 17th of October 2023**, ICP Shanghai 2023 serves as the central venue for the 20th ICP conference. The conference program spans four days, commencing on Saturday and concluding on Tuesday. Each day will feature presentations delivered by specially invited speakers, which will be followed by interactive Q&A sessions. The program will also incorporate a Poster Session, a welcome reception, a president reception, the ICP business meeting, and a gala banquet.

Shanghai, the beautiful dynamic city of China is renowned for its enriched diverse cultures, histories, and commercial developments. Due to its geological advantage in central China and the well-preserved historical developments, Shanghai has become China's gateway to the world for foreign investments and international affairs, as well as been chosen to be the host city of World Expo 2010. Overall, Shanghai represents the fusion of traditional and modern China.

Shanghai is comprised of two areas divided by the Huangpu River. The older town on the west bank is known as Puxi, while the rising new district on the east is the Pudong New District. These two areas of Shanghai are well-integrated, providing Shanghai with a traditional Chinese ambience but also has her unique foreign flair that no other China city can compare to. The erected skyscrapers, bustling traffic, fast-paced lifestyle, and glamorous night activities continually draw people to this booming city. Shanghai is an excellent city whether you are here for business or leisure. The contemporary Oriental Pearl TV Tower, beautiful Yuyuan Garden, vivid Huaihai Road and Nanjing Road plus many other Shanghai spots will assure you a memorable Shanghai travel.

Dr. Xinquan Jiang
Co-President of the International College of Prosthodontists
President Elect of Chinese Prosthodontics Society
Vice President of Chinese Stomatological Association
Discipline Leader of the Prosthodontics Department
Shanghai Ninth Peoples Hospital
Dean of the School of Dentistry, Executive Dean of the College of Stomatology
Shanghai Jiao Tong University

The perfect pairing.

GC EUROPE N.V.
info.gce@gc.dental
https://europe.gc.dental/en-GB

Sponsors & Exhibitors

The following Sponsors and Exhibitors are in cooperation with the 2023 London Symposium:

Educational Grant

Haleon UK Trading Limited
Building 5, First Floor, The Heights Weybridge
Surrey KT13 0NY United Kingdom
Website: www.haleon.com

Gold Exhibitor

Ivoclar
175 Pineview Drive
Amherst, NY 14228 United States
Tel: 800 533 6825
Email: IVonline.us@ivoclar.com
Website: www.ivoclar.com

Silver Exhibitors

GC Corporation
76-1, Hasunuma-Cho, Itabashi-Ku
174-8585, Tokyo, Japan
Website: www.gc-dental.com

J. MORITA Corporation
3-33-18 Tarumi-cho, Suita-shi
Osaka 564-0062 Japan
Website: www.morita.com/group/en/

Exhibitors

Keystone Dental Group
154 Middlesex Turnpike
Burlington, MA 01803 USA
Website: www.keystonedental.com

Kuraray Europe GmbH
Philipp-Reis Str. 4
65795 Hattersheim, Germany
Website: www.kuraray.eu

Shofu Inc.
11, Kamitakamatsucho, Fukuine,
Higashiyama-ku
Kyoto 605-0983 Japan
Email: info@shofu.co.jp
Website: www.shofu.com/global

Southern Implants
1 Albert Road
Irene, Pretotia, South Africa
Email: info@southernimplants.com
Website: www.southernimplants.com

ICP 2021-2023 Officers & Board of Councilors

PRESIDENTS

Dr. David Bartlett
Kings College London Dental Institute
Prosthodontics
London, UK

Dr. Xinquan Jiang
Ninth Peoples Hospital affiliated to
Shanghai Jiao Tong University,
School of Medicine
Director of the Dept. of Prosthodontics,
Shang-hai Jiao Tong University, Shanghai, China

VICE PRESIDENTS

Dr. David Felton
University of North Carolina
Adams School of Dentistry
Adjunct Faculty
Chapel Hill, NC USA

Dr. Dale Howes
University of Sydney
Department of Oral Rehabilitation
Associate Professor
Sydney, NSW Australia

SECRETARY

Dr. Limor Avivi-Arber
University of Toronto / Prosthodontics
Faculty of Dentistry
Assistant Professor, Dept. of Prosthodontics
Toronto, ON, Canada

TREASURER

Dr. Kazuyoshi Baba
Chair and Professor
Department of Prosthodontics
Showa University
Tokyo, Japan

BOARD OF COUNCILORS

Dr. Francesco Bassi
University of Turin
Dept. of Surgical Science, CIR Dental School,
Prosthodontic Section, Full Professor
Dental School, Lingotto

Dr. James Dudley
Professor in Dentistry
Adelaide Dental School
The University of Adelaide
Adelaide, South Australia

Dr. Kung-Rock Kwon
KyungHee University
School of Dentistry
Dept.of Prosthodontics
Seoul, South Korea

Dr. Dean Morton
Indiana University School of Dentistry
Prosthodontics
Indiana University School of Dentistry
Department of Prosthodontics
Indianapolis, IN USA

Dr. Carlos Parra
Universidad Andres Bello - UNAB
Implant Graduate Program Director
Santiago, Chile

Dr. Stephen Rosenstiel
The Ohio State University
Restorative and Prosthetic Dentistry
Professor Emeritus
The Ohio State University College of Dentistry
Columbus, OH USA

Dr. Arzu Tezvergil-Mutluay
University of Turku
Department of Prosthetic Dentistry
Adjunct Professor of Prosthodontics
Turku Finland

Dr. Meriting Thokoane
University of the Witwatersrand
Department of Oral Rehabilitation
Head Clinical Unit, Dr
Faculty of Health Sciences
School of Oral Health Sciences
Johannesburg, Gauteng South Africa

RECENT PAST PRESIDENTS

Dr. Jung-Suk Han
School of Dentistry, Seoul National University
Department of Prosthodontics
Seoul, South Korea

Dr. Sreenivas Koka
Dean of the School of Dentistry
The University of Mississippi Medical Center
Jackson, Mississippi USA

THE X FACTOR

True universal all-in-one adhesive

BeautiBond Xtreme

- For a wide range of applications and adherends with one bottle
- Compatible with all etching techniques
- No filler and no HEMA – protection against hydrolysis

An unbeatable team!

BeautiBond Xtreme can be ideally combined with the innovative fluoride-releasing direct composite restoratives of the BEAUTIFIL family.

Injectable hybrid composite in 2 viscosities

BEAUTIFIL Flow Plus X

- Class I to V restorations, incl. occlusal surfaces
- Natural aesthetics thanks to chameleon effect
- Excellent handling and optimal polishability

Pasty composite for anterior and posterior restorations

BEAUTIFIL II LS

- Low polymerisation shrinkage (< 1 %) and shrinkage stress
- High abrasion resistance and antagonist-friendly surface hardness
- Natural light transmission and diffusion

SHOFU

www.shofu.de/en

2023 ICP London Symposium Program Schedule

WEDNESDAY, AUGUST 30, 2023	
09:00-17:00	**ICP Board Meeting (board members only)**
17:00-18:30	**ICP Welcome Reception at the Hilton London Tower Hotel** **Location: Tower Foyer** ***Satellite Registration Desk open during this time at the Hilton****
19:00	**ICP Invited Speakers Private Dinner (invite ONLY)**

THURSDAY, AUGUST 31, 2023	
09:00 - 12:30	**Focus Session- Keynote Presentations** **Topic: What Research Tells Us** Room: New Hunts House 1 **Moderator: David Bartlett**
09:00	**Invited Speaker: Terry Walton** The Harold Preiskel Lecture The Evolution of the Implant-Abutment Interface | R.I.P. the External Hex?
09:45	**Invited Speaker: Danielle Layton** Statistics: The Mathematical Theory of Ignorance
10:30	BREAK - Exhibit Review
11:00	**Invited Speaker: Charlie Goodacre** Innovative Guidelines for Biopositioning of Single Implants and Bioform of Single Implant Crowns: Their Impact on Crown Esthetics, Peri-Implant Health, and Peri-Implant Mucosal Esthetics
11:45	**Invited Speaker: Harold Preiskel** Lifetime of Learning
12:30 - 13:30	CONFERENCE LUNCH & POSTER REVIEW

13:30 - 17:30	Concurrent Sessions	
	Session A: Advanced Biomaterials Room: New Hunts House 1 **Moderators: Rupert Austin and Dave Felton**	**Session B: Multidisciplinary/ Maxillofacial I** Room: New Hunts House 2 **Moderators: Michael Fenlon and Tom Salinas**
13:30	**Invited Speaker: Owen Addison** The Future of Materials in Prosthodontics	**Invited Speaker: Frank Tuminelli** The Evolution of Full-Arch Implant Dentistry… Our Journey to a Digital Future
14:00	**Invited Speaker: Arzu Tezvergil-Mutluay** Contemporary Adhesive Strategies for Direct and Indirect Restorations	**Invited Speaker: Tom Salinas** The Ebb and Flow of Maxillofacial Prosthetic Reconstruction Trends
14:30	**Invited Speaker: Ami Smidt** Key Aspects in Comprehensive Prosthodontic Dental Treatment: Decision Making in the Digital Age	**Invited Speaker: Limor Avivi-Arber** Diversity, Equity and Inclusion Matter not Only in Dental Occlusion Research and Practice
15:00		**Mahmoud Elbashti** Report From 2nd yMPE Workshop
15:15	BREAK - Exhibit Review	
	Session A: Esthetic Dentistry/ Digital Technology Room: New Hunts House 1 **Moderators: Saoirse O'Toole and Arzu Tezvergil-Mutluay**	**Session B: Multidisciplinary/ Maxillofacial II** Room: New Hunts House 2 **Moderators: Eva Anadioti and Meriting Thokoane**
15:45	**Invited Speaker: Kazuyoshi Baba** New Era of Digital Dentistry: Database-driven Prosthodontics	**Invited Speaker: Eva Anadioti** Implant Supported Full-Arch Solutions: Current Fixed & Removable Options
16:15	**Invited Speaker: Murali Srinivasan** Complete Dentures 2023: Fully Digital	**Invited Speaker: Meriting Thokoane** Our Reality Our Challenges Our Inspiration

16:45	**Konstantinos Kountouras** Back to the Future. The 4D Evolution of the All-on-X Digital Workflow	**Adrian Naveau** Efficacy of a New Membrane Obturator Prosthesis for Patients with Acquired Soft Palate Defects
17:00	**Du Chen** A Deep Learning-Based Morphological Completion Framework for Efficient and Accurate Design of Restorations	**Doke Buurman** Tooth Extractions prior to Chemoradiation or Bioradiation are Associated with Weight Loss during Treatment for Locally Advanced Oropharyngeal Cancer
17:15	**Abdelrahman Badarneh** An in-vitro Study of Accuracy of Partial Denture Frameworks Fabricated using Conventional and Digital Workflows	**Niraj Kumar Mishra** Assessment of Swallowing and Masticatory Performance in Obturator Wearers: A Clinical Study
17:30	Adjourns	

FRIDAY, SEPTEMBER 1, 2023		
09:00 - 12:30	**Concurrent Sessions**	
	Session A: Measurement of Tooth Wear - *Sponsored by Haleon* Room: New Hunts House 1 **Moderators: Limor Avivi-Arber and Arun Sharma**	**Session B: Implant Prosthodontics I** Room: New Hunts House 2 **Moderators: Kalpesh Bavisha and Sophie Watkins**
09:00	**Invited Speaker: David Bartlett** Scanning and Measuring Tooth Wear in the Laboratory - Limitations and Findings	**Invited Speaker: Sachin Varma** Implants in Clinical Practice: Challenges, Complications, and Solutions
09:30	**Invited Speaker: Rupert Austin** Monitoring Wear with Intra-Oral Scanners Part 1: Current thresholds of detection of IOS	**Invited Speaker: Nicola Zitzmann** Implant Retreatment
10:00	**Invited Speaker: Saoirse O'Toole** Monitoring Wear with Intraoral Scanners Part 2: Current Limits of Detection and What the Future Hold	**Invited Speaker: Sherif Elsharkawy** Bioengineering Solutions to Tackle Prosthodontic Challenges

10:30	BREAK - Exhibit Review	
11:00	**Mario Dawud** Erosive Tooth Wear Combined with Bruxism and Parafunctional Habits; Prevention, Diagnosis and Treatment	**Istvan Lampe** Physical and Biological Features of Silver Nanoparticle Coated Titanium Surface to help the Prevention of Periimplant Imflammation
11:15	**Balendra Pratap Singh** Efficacy of Occlusal Splint versus Sleep Hygiene and Progressive Muscle Relaxation on Sleep Bruxism	**Kiran Amin** An International Response to the Management of Unknown Dental Implants
11:30	**Martin Schimmel** Prevalence of Self-Reported Signs and Symptoms of Temporomandibular Disorders Amongst Professional and Student Musicians: Preliminary Results of an Online Survey	**Garima Charan** Prosthodontic Outcomes for Implant System Connections Supporting Single-Unit Implant Crown Restorations: A Systematic Review
11:45	**Sunit Jurel** Evaluation of Mandibular Advancement Device Placement based on Levels of TNF-Alpha in Participants with Obstructive Sleep Apnea: A Clinical Study	**Francesco Bagnasco** Accuracy of Implant Milled Frameworks Fabricated with Intraoral Scans and Plaster Impressions: A Clinical Study
12:00	**Pooran Chand** Identification of Metabolic Fingerprints in Severe Obstructive Sleep Apnea using Gas Chromatography–Mass Spectrometry	
12:15	**Pranjali Dutt** A Computed Tomographic Evaluation of Mandibular Advancement Device Effect at Two Different Horizontal Jaw Positions in Obstructive Sleep Apnea Patients	
12:30-13:30	CONFERENCE LUNCH & POSTER REVIEW	

13:30 - 17:00	Concurrent Sessions	
	Session A: Denture Session Room: New Hunts House 1 **Moderators: Arun Sharma and Meriting Thokoane**	**Session B: Implant Prosthodontics II** Room: New Hunts House 2 **Moderators: Rupert Austin and Sachin Varma**
13:30	**Invited Speaker: Michael Fenlon** Edentulousness – Still a Challenge in the 21st Century	**Invited Speaker: Lambis Petridis** Can the Implant-Abutment Interface Affect the Success of Dental Implant Treatment?
14:00	**Invited Speaker: Dave Felton** Why Dentures Matter	**Invited Speaker: Shakeel Shahdad** Prosthodontic Rehabilitation of Challenging Clinical Situations with Implants
14:30	**Invited Speaker: Joke Duyck** Education in Removable Partial Denture Design using a 3D Interactive Tool	**Invited Speaker: Alon Preiskel** Managing Occlusal Risk Factors in Immediate Implant Loading
15:00	BREAK - Exhibit Review	
15:30	**Invited Speaker: Mariam Margvelashvili-Malament** Choosing Restorations in the Patients with Parafunctional Habits	**Elham Emami** Patient's Expectation and Satisfaction with Immediately Loaded Zygomatic-Implant Rehabilitation
15:45		**Ramashanker Siddharth** A Clinical Study to Compare Implant Stability, Bone Loss using Early Loading Protocol in Two Implant Systems with Different Design
16:00	**Leonardo Ciocca** A Metrological Pilot Study to Compare Digital and Analogic Articulators for Complete Dentures	**Shiu Fong Ou** Assessing Accuracy of Static Computer-aided Implant Surgery in Fully Digital Workflow through Non-radiologic Techniques
16:15	**Neena D'Souza** Cast Removable Denture Prostheses: Establishing Expectations to Improve Outcomes	**Bhaskar Agarwal** Patient and Dentist Acceptability of a Newly Developed Wheel Chair Recliner for Geriatric and Special Care Need Patients

16:30	**Kyung Chul Oh** Evaluation of Denture Base Resins: Shear Bond Strength for Repair, Flexural Strength, and Color Stability	**Matshediso Mothopi-Peri** The Role of the International Organisations such as the ICP in Shaping the World!
16:45	**Leslie Laing** Tooth Loss and Sjögren's: What Are the Options if Implants Fail?	**David Chvartszaid** The Challenge of Complex Care Delivery within a Learning Environment
17:00	**Ting Wang** Contemporary Options for Management of Edentulous Arches	**Mayank Singh** A Randomized Control Trial for Evaluation of Implant Stability and Loading Time with Photo-Functionalized Dental Implant in Fresh Extraction Socket
17:15	Adjourn	
19:30-23:00	**ICP Reception and Banquet at the Hilton London Tower** **Location: Tower Suite**	

SATURDAY, SEPTEMBER 2, 2023	
09:00 - 12:00	**Focus Session- Keynote Presentations** **Topic: What Research Tells Us** Room: New Hunts House Lecture 1 **Moderators: David Bartlett**
09:00	**Invited Speaker: Kenneth Malament** An Advanced Perspective on Litium Disilicate Restorations in the Age of Zirconia
09:40	**Invited Speaker: Aaron LeBlanc** Putting Evolution Back into Dentistry: A Palaeontologist’s Approach to the Study of Teeth
10:20	BREAK - Exhibit Review
10:45	**Invited Speaker: Dean Morton** Contemporary Treatment and Workflow Options: Designed to Prevent and Manage Complications for Completely and Partially Edentulous Patients
11:15	**Invited Speaker: Tom Taylor** Dental Implants and Occlusal Overload: What's the Risk?

11:45	Announcements
12:00	Meeting Adjourns
13:30- 16:30	**ICP Networking Cruise on the Thames** **Departure from Bankside Pier**

The 2023 Scientific Program Schedule is subject to change.

Views expressed by the presenters at the ICP Meeting are solely their own and do not necessarily reflect the positions or policies of the ICP or ICP. The ICP reserves the right to cancel or modify its program as circumstances might dictate.

2023 Invited Speakers

INVITED SPEAKERS

Invited Speaker – Owen Addison
Professor of Oral Rehabilitation
King's College London
London, United Kingdom

Title: The Future of Materials in Prosthodontics

Abstract: In this presentation we will review what has been achieved with contemporary prosthodontic and implant materials, before introducing the rationale for new materials and what new biomaterials are under development.

Biography: Owen Addison is currently Professor of Oral Rehabilitation at King's College London and a specialist in Prosthodontics. He qualified as a dentist from the University of Birmingham in 2001, gained his PhD in Biomaterials in 2007 from the same institution, and completed the 5-year specialist clinical in 2012. Appointed as a Lecturer at the University of Birmingham in 2007, he became Senior Lecturer and honorary Consultant in Restorative Dentistry 2012, and in 2015 was promoted to Chair in Applied Biomaterials. In 2016 he took up the position as the ADA&C Endowed Chair in Oral Health Translational Research at the University of Alberta in Canada where he spent 3 years, before returning to the UK in 2019. Owen combines a specialist clinical activity in Prosthodontics with a well-established research programme in biomaterials and medical device development.

Invited Speaker – Eva Anadioti
Associate Professor of Clinical Restorative Dentistry
Department of Preventive and Restorative Sciences
University of Pennsylvania
Philadelphia, PA USA

Title: Implant Supported Full-Arch Solutions: Current Fixed & Removable Options

Abstract: Edentulism is prevalent in many parts of the world and removable prostheses have traditionally been used for its management with several limitations. As implant and digital dentistry advancements occur, improvements towards implant retained removable prostheses have changed the way we treat the edentulous population. Despite the higher initial costs, those prostheses lead to higher oral health related quality of life while they are still more affordable compared to other implant supported treatment alternatives. This presentation will review the contemporary full-arch fixed and removable implant solutions with a focus on the prosthetically driven surgical treatment planning and prosthetic sequencing of implant supported removable prostheses. Clinical cases with different attachment systems incorporating fully digital workflow will be presented. Treatment sequence with appropriate as well as inadequate planning will be reviewed as a learning tool for future success.

Biography: Dr. Eva Anadioti is an Associate Professor of Clinical Restorative Dentistry at the University of Pennsylvania School of Dental Medicine and the Founding and current Director of the Advanced Education Program in Prosthodontics. She received her Certificate in Prosthodontics and Master's degree from the University of Iowa College of Dentistry and then completed a surgical implant fellowship at the University of North Carolina School of Dentistry. Dr. Anadioti is a Diplomate of the American Board of Prosthodontics, a Director at the

American College of Prosthodontists Education Foundation Board and the Prosthodontic Commissioner at the Commission on Dental Accreditation. She has publications in peer-reviewed journals, has presented her work at university and professional conferences worldwide and has received awards both locally and nationally.

Invited Speaker – Rupert Austin
Senior Clinical Lecturer and Honorary Consultant in Prosthodontics
King's College London
London, United Kingdom

Title: Monitoring Wear with Intra-Oral Scanners Part 1: Current thresholds of detection of IOS

Abstract: Understanding the limitations of intra-oral scanners measurement capabilities is important to guide clinicians as to how confident they can be when making assumptions about the outcome of a measurement using intra-oral scanners. Our research has focused on the fundamental measurement capabilities of intra oral scanners in terms of understanding common pitfalls of measurement. We have developed novel techniques to ascertain the threshold of measurement which suggests that for a natural human tooth being scanned locally the threshold is around 88 microns however full arch scanning further decreases the ability to discriminate an erosive tooth wear lesion to 120 microns and beyond. Further developments are needed to ensure we can accurately measure tooth wear in vivo.

Biography: Dr. Austin is a Clinical Senior Lecturer and Consultant in Prosthodontics at King's College London's Faculty of Dentistry, Oral & Craniofacial Sciences. The Discipline of Prosthodontics focuses on aesthetic restoration and replacement of natural teeth using state-of-the-art technologies for the design and manufacture of dental restorations, including aesthetic veneers, crowns, bridges and implants for oral rehabilitation. Dr Austin is also Service Lead for Digital Dentistry at Guy's and St. Thomas' NHS Foundation Trust Dental Directorate. Dr. Austin graduated Dentistry with Honours from the University of Manchester (2006), Dental Foundation Training with a Membership at the Royal College of Surgeons of England (2008), a PhD in Enamel Erosion (2011) and Specialty Registrar Training in Prosthodontics with a Masters in Clinical Dentistry with Distinction and Membership in Prosthodontics at the Royal College of Surgeons of Edinburgh (2015). He was appointed an Honorary Consultant in Prosthodontics at Guy's and St. Thomas' NHS Foundation Trust in 2017. Dr Austin holds Fellowships with the Higher Education Academy and the Academy of Medical Educators and is President of the Odontology Section of the Royal Society of Medicine (2016-18). He is clinical lead for the Digital Dentistry at Guy's Hospital and the Undergraduate Care Planning Clinics at King's College London's Faculty of Dentistry, Oral & Craniofacial Sciences. Rupert's educational leadership includes contributions to curriculum design, student assessment and feedback, and mentoring and pastoral care.

Invited Speaker – Limor Avivi-Arber
Associate Professor
Faculty of Dentistry
University of Toronto
Toronto, ON, Canada

Title: Diversity, Equity and Inclusion Matter not Only in Dental Occlusion Research and Practice

Abstract: This presentation will highlight the significance of investigating sexual and gender dimorphism related to orofacial functions. It will discuss challenges in sex/gender research, and suggest investigative approaches to study orofacial sensorimotor functions to identify sex-specific differences and possible mechanisms underlying orofacial functions and patients' adaptation to alterations in the oral environment.

Biography: Dr. Limor Avivi-Arber is a tenured Associate professor at the Faculty of Dentistry, in the University of Toronto, Canada. Dr. Avivi-Arber has two B.Sc. degrees with honours in Medical Sciences and Pharmacy, and D.M.D. with honours from the Hebrew University in Jerusalem. She received her Diploma in Prosthodontics, M.Sc. with honours, a Ph.D., and a Certificate in Neuroscience from the University of Toronto in Canada. Dr. Avivi-Arber has more than 50 publications and several research grants, focusing on the neuroscience of oral rehabilitation and neuroscience. She is also very active and takes several leadership roles in research and the prosthodontic community, including being the Secretary of International College of Prosthodontists, a member of the IADR neuroscience group, and a co-organiser of Future Leaders in Prosthodontic workshops. She is an Associate Editor in the Journal of Oral Rehabilitation, and a member of the Editorial Board of the International Journal of Prosthodontists, Journal of Prosthetic Dentistry, and the Journal of Prosthodontic Research

Invited Speaker – Kazuyoshi Baba
Chair and Professor
Department of Prosthodontics
School of Dentistry, Showa University
Tokyo, Japan

Title: New Era of Digital Dentistry:
Database-driven Prosthodontics

Abstract: The introduction of advanced digital technology and newly developed biomaterials into dental practice has had a significant impact on the dental practice; CAD/CAM restoration has already become an integral part of prosthetic treatment, and intra-oral scanners (IOS) have been becoming increasingly popular in the market due to its advantages over conventional methods. Furthermore, the evolution of monolithic zirconia materials has greatly facilitated treatment efficiency. These innovations have enabled a model-free, fully digital workflow possible. In this talk, I will discuss the future of digital dentistry by first explaining the advantages of a fully digital workflow and then introducing the concept of "database-driven prosthodontics."

Biography: Dr. Kazuyoshi Baba graduated from Tokyo Medical and Dental University (TMDU) in 1986 and completed PhD in 1991 at TMDU. Dr. Baba is currently Dean of at Showa University School of Dentistry and Chair and Professor of the department of prosthodontics. Dr. Baba is a widely recognized researcher in the field of Prosthodontic treatment outcome

assessments; sleep bruxism, and digital dentistry, who has published more than 100 papers in peer-reviewed journals in English. Dr. Baba and the researchers in his lab. received more than 20 awards from national and international scientific societies. Dr. Baba is the past editor in chief of Journal of Prosthodontic Research (2022 impact factor: 4.338) and the immediate past President of Japan Prosthodontic Society and a board member of International Collage of Prosthodontists

Invited Speaker – David Bartlett
Center for Oral, Clinical and Translational Sciences
Prosthodontics, Faculty of Dentistry, Oral & Craniofacial Sciences
King's College London
Guy's Hospital
London, United Kingdom

Title: Scanning and Measuring Tooth Wear in the Laboratory - Limitations and Findings

Abstract: The lecture will overview digital maps of teeth captured by laboratory and intra oral scanners. It will explain how they work and their limitations. It will overview how they measure change, the complexity of superimposition and subtraction in doing so set the scene for the subsequent lectures in session.

Biography: Professor David Bartlett is Head of Centre for Clinical, Oral and Translational sciences and at the Faculty of Dentistry, Oral and Craniofacial Science, King's College London. He is internationally recognised for his research on erosive tooth wear, a joint founder of the erosive tooth wear foundation; a charity to improve knowledge and understanding of the condition. He is also head of prosthodontics and heads a team of 20 consultants training largest trainees in Prosthodontics in Europe.

Invited Speaker – Joke Duyck
Professor
Department of Oral Health Sciences
KU Leuven, Belgium

Title: Education in Removable Partial Denture Design using a 3D Interactive Tool

Abstract: Despite the preservation of teeth into old age, there are still many people who become partially edentulous and seek a prosthetic solution for this. If tooth- or implant-supported fixed prosthetic restoration is not possible or feasible, a removable prosthesis may be necessary. When the removable partial denture is fitted with a metal base frame, anchors and supports are fitted to the pillar teeth. These offer advantages in terms of retention and stability of the removable prosthesis. It is important that the support and retention arms of such a framed prosthesis are placed in the appropriate locations to provide optimal stability and retention of the prosthesis, taking into account the available pillar teeth. The purpose of this lecture is to refresh the basic mechanical principles for designing a frame prosthesis and discuss some concrete cases using a 3D interactive tool to facilitate teaching.

Biography: Joke Duyck is a full professor in the Department of Oral Health Sciences at KU Leuven. She holds a degree in dentistry (1995), specialist in Prosthetic Dentistry (2000) and a PhD in medical sciences (2000) from KU Leuven in collaboration with the University of Oslo.

She is responsible for teaching gerodontology and removable prosthetic dentistry within KU Leuven. Her research focuses on gerodontology and prosthetic dentistry, and in particular on the integration of oral health care in care planning for frail older persons. She is a member of the board of directors of the Flemish Institute of Oral Health and responsible for the preventive oral health care for frail older persons in Flanders.

Invited Speaker – Sherif Elsharkawy
Senior Clinical Lecturer in Prosthodontics,
Centre for Oral, Clinical, and Translational Sciences
Faculty of Dentistry, Oral & Craniofacial Sciences
King's College London
London, United Kingdom

Title: Bioengineering Solutions to Tackle Prosthodontic Challenges

Abstract: Nature has evolved throughout the years to generate inspiring designs, in a way that intrigued humans to exploit and mimic those designs to generate advanced futuristic technologies. As prosthodontists, we should investigate novel bio-inspiring solutions to solve some of our challenging clinical problems. Our work reports on the discovery of the intrinsically disordered nature of key proteins, which enables modulation over their molecular conformation in a controlled manner. We exploited this molecular tuneability to guide organic-inorganic interactions and control mineralization. My lab is interested to utilize this expertise in developing bio-inspired and digital platforms, not only to provide new tools to repair dental hard tissues such as bone or teeth, but also to create solutions for edentulism.

Biography: Dr. Sherif Elsharkawy is a Senior Lecturer and Honorary NHS Consultant in Prosthodontics at King's College London. Dr Elsharkawy carried out his PhD in Engineering and Materials Science at Queen Mary University of London, before joining KCL, where he completed his clinical academic specialist training funded by NIHR. His research group is interested in developing bioengineering solutions to fabricate hierarchically- organized materials to tackle enamel disorders, bone defects, and other prosthodontic challenges. His group also focuses on understanding the role of protein disorder in pathological calcifications including cardiovascular and brain calcifications.

Invited Speaker – David A. Felton
Interim Director, Graduate Program in Prosthodontics
UNC Adams School of Dentistry
Chapel Hill, NC US

Title: Why Dentures Matter

Abstract: When one considers the advances in preventive and restorative dentistry over the past 50+ years, it seems as though the prevalence of complete edentulism SHOULD be nearly extinct. Dental caries and periodontal disease, both preventable diseases, remain the primary etiologic factors responsible for edentulism globally. Recent reports place the prevalence of complete edentulism as 4.9% in the US, 6.4% in Canada, 8.5% in South Africa, 9% is China, 16.3% in India, 18% in Russia, and 21.7% in Mexico. The prevalence increases in the older populations. In spite of the growth of dental implant therapy since the introduction of the concept of osseointegration by PI Branemark, many edentulous patients simply cannot afford implant related reconstruction. This presentation will focus on the factors related to

complete edentulism, and will document the importance of complete denture prosthetics globally.

Biography: Dr. David Felton completed his DDS, Certificate in Prosthodontics, and MS degrees at the University of North Carolina School of Dentistry (UNC) in 1977 and 1984, respectfully. He entered academics at UNC in 1984, and served as Graduate Prosthodontics Program Director, and Department Chair during his 28 years on the faculty. In 2011, he became the Dean of the WVU School of Dentistry, and in 2016 became the Dean of the University of Mississippi School of Dentistry. Retiring in November of 2020, he returned to part-time academics at UNC in 2021, and served as interim Director of Graduate Prosthodontics from January 2022 through June of 2023. Dr. Felton has served as president of the American College of Prosthodontists, the Academy of Prosthodontics, the American Board of Prosthodontics, and currently serves as co-vice President of the International College of Prosthodontists. He has published over 60 manuscripts in peer-reviewed journals. His research focus is on edentulism and co-morbid factors.

Invited Speaker – Michael Fenlon
Professor of Prosthodontics, Honorary Consultant in Restorative Dentistry
Service Lead for Restorative Dentistry,
Faculty of Dentistry, Oral & Craniofacial Sciences
Guy's Hospital
London, United Kingdom

Title: Edentulousness – Still a Challenge in the 21st Century

Abstract: The purpose of this presentation is to explore the challenges involved in treating edentulous patients in the 2023. Edentulousness is our oldest clinical challenge in Prosthodontics and is currently a deeply unfashionable subject, if the proportion of Prosthodontics research devoted to edentulousness is a good indicator. While the number of edentulous patients as a portion of the population has fallen dramatically in the last half century, for those remaining edentulous patients, the challenges they pose to clinicians are in many cases greater than ever, despite the technological advances we have achieved in the last 50 years. This presentation will explore the demographics and challenges to treatment for edentulous patients.

Biography: Professor Fenlon has worked in King's College London since 1989. His research interests include quality of life improvement arising from provision of conventional and implant prosthodontics, quality of care as a predictor of outcome in Prosthodontics, rehabilitation of patients treated for head & neck cancer, control/elimination of aerosols in Dentistry control and quality of life for edentulous patients. He has published 80+ refereed papers in peer reviewed journals. His continuing clinical activity includes general, implant and maxillofacial Prosthodontics.

Invited Speaker – Charles J. Goodacre
Distinguished Professor
Advanced Education Program in Implant Dentistry
Loma Linda University School of Dentistry
Loma Linda, CA US

Title: Innovative Guidelines for Biopositioning of Single Implants and Bioform of Single Implant Crowns: Their Impact on Crown Esthetics, Peri-Implant Health, and Peri-Implant Mucosal Esthetics

Abstract: The biopositioning of single implants relative to adjacent teeth has a profound effect on crown esthetics and the bioform of implant crowns affects both peri-implant health and mucosal esthetics. This presentation will identify and illustrate recently developed guidelines for the positioning of implants to optimize crown esthetics. In addition, the S-shaped cervical crown contour will be presented to show how it can be used to encourage incisal migration of the gingiva around natural tooth crowns and the peri-implant mucosa around implant crowns.

Biography: Dr. Goodacre received his DDS degree from Loma Linda University and completed a combined program in Prosthodontics and Dental Materials at Indiana University. He served as Chair of the Department of Prosthodontics at Indiana University and as Dean of the Loma Linda University School of Dentistry. He is a Diplomate of the American Board of Prosthodontics, Past-President of the American Board of Prosthodontics, and Past-President of the American College of Prosthodontists. He is a Distinguished Professor and teaches in the Advanced Education Program in Implant Dentistry at Loma Linda University and maintains a practice devoted to prosthodontics and implant dentistry.

Invited Speaker – Danielle Layton
Specialist Prosthodontist
Adjunct Associate Professor
University of Queensland
Brisbane, Australia

Title: Statistics: The Mathematical Theory of Ignorance

Abstract: It has been said that statistics should be used like a blind man uses a lamp post: for support and not for illumination. Why do bookies use odds for a horserace? Do storks really deliver babies? How can you make trousers for the average number of legs? Unfortunately, as we read through our prosthodontic literature, we are often left with the thought that the precise results are based on statistics that have accurately stated a half-truth inaccurately.

Biography: Adj A/Prof Danielle Layton is a prosthodontist in practice in Brisbane and at University of Queensland, Australia. She graduated from University of Queensland with a Bachelor of Dental Science with honours and the University medal (2000); from the University of Sydney with a Master of Dental Science in prosthodontics with honours (2005); and from Oxford University, United Kingdom, with a Master of Science (2011) and Doctor of Philosophy in Evidence Based Health Care (2015). Dr. Layton is appointed by the Academy of Prosthodontist (USA) as the Editor of the Glossary of Prosthodontic Terms; to the Academy of Australian and New Zealand Prosthodontists Standards Committee; and is a reviewer for multiple international journals. Dr. Layton publishes and lectures widely, and explores research interests in survival outcomes, medical indexing, research waste and the influence of withdrawn

data. Dr. Layton is a nationally and internationally recognized expert in the field of prosthodontics and biostatistics.

Invited Speaker – Aaron LeBlanc
Lecturer in Dental Bioscience
Faculty of Dentistry, Oral & Craniofacial Sciences
Guy's Campus, King's College London
London, United Kingdom

Title: Putting Evolution Back into Dentistry: A Palaeontologist's Approach to the Study of Teeth

Abstract: Palaeontology and dentistry are seemingly unrelated fields, but they have a surprisingly rich and intertwined history. This talk explores those historical connections, showing how the foundations for dentistry in England were laid through the comparative study of animal teeth, both living and fossil. Comparative dental anatomy and evolution may not be as prevalent in dental education as they were in the past, but they still have tremendous value in pedagogy, foundational, and translational science. As a gateway science for young people today, exploring the connections between extinct animals and their dental anatomy provides an effective tool for engaging students with core concepts in dentistry and oral hygiene. However, palaeontology can also provide scientific insights into the origins of our teeth, why they appear the way they do in health and disease, and potentially reveal new avenues for bio-inspired solutions to current challenges in oral biology.

Biography: Lecturer in Dental Biosciences, Faculty of Dentistry, Oral & Craniofacial Sciences, King's College London. Education PhD in Ecology and Evolutionary Biology from the University of Toronto (Canada) (2011-2016) MSc in Systematics and Evolution from the University of Alberta (Canada) (2008-2011), BSc with honours in Palaeontology from the University of Alberta (Canada) (2004-2008). Aaron's research interests are in the evolution and development of teeth, from fish, to dinosaurs, to mammals, and everything in between. He has over 40 peer-reviewed papers and over 50 conference presentations in palaeontology, evolutionary biology, and comparative dental histology, studying the origins of complex enamel, the periodontal tissues, and tooth replacement mechanisms, among others. He joined King's College London first as a Marie Curie Postdoctoral Fellow in late 2020 before starting a Lecturer position at King's in January 2023.

Invited Speaker – Kenneth Malament
Clinical Professor
Tufts University
Boston, MA USA

Title: An Advanced Perspective on Lithium Disilicate Restorations in the Age of Zirconia

Abstract: Dentistry that is esthetic to the patient is an important clinical objective. The knowledge within dental technology, dental science and dental practice has dramatically expanded leading to better quality; artistry and more standards based clinical applications. Ceramics are the most consistently predictable esthetic dental material. Today dentists can offer more treatment options for patient's complex problems. The single phase or monolithic all-ceramic materials have become increasingly more popular with minimal chipping. These types of dental ceramic materials are dominating the market and future development bringing with it more long-term success. Metal-ceramics and monolithic Zirconia are the "state of the art" for complex implant prosthodontics. All-ceramic materials were developed to improve ceramic color and marginal fit. Present bi-layered allceramic crowns on molars have reached their full potential. Despite substantial improvements in material strength and toughness, they still may fail because of breakage and chipping. The Lithium Disilicate e. max and Zirconia mono-layered all-ceramic material are changing dentistry and the realization of long-term ceramic survival. Original research will be presented that studied the clinical behavior of almost nine thousand seven hundred all-ceramic restorations and specifically significantly more than 4800 e. max Lithium Disilicate restorations.

Learning Objectives:
1. To understand what factors and concerns a prosthodontist would have treating patients that require "esthetic procedures".
2. To understand the controversies that exist with modern dental materials.
3. To understand what clinical factors impact on long term survival of dental ceramic materials. The e max lithium disilicate ceramic restoration has proved with over 4800 restorations and 18 years to be the most successful ceramic ever studied.
4. To understand the restoration of dental implants in complex conditions.

Biography: Dr. Malament received his D.D.S. from N.Y.U. College of Dentistry and a specialty certificate and Master's degree from Boston University School of Graduate Dentistry. Dr. Malament has a full time practice limited to prosthodontics in Boston that includes a dental laboratory with master dental technologists. A Past-President of the American Board of Prosthodontics, he is a Clinical Professor at Tufts University and a Course Director in the postgraduate department of Prosthodontics. He has served as the President of the Academy of Prosthodontics, President of the American Academy of Esthetic Dentistry, President, Greater New York Academy of Prosthodontics, President, Northeastern Gnathological Society and President of the American Academy of Dental Science. Dr. Malament is a Fellow of the International College of Prosthodontists and served on the Executive Board and Treasurer. Dr. Malament has been the recipient of significant awards in Prosthodontics including the American College of Prosthodontists' Clinician / Researcher Award, Daniel F. Gordon Award for Lifetime Achievement and Distinguished Lecturer Award, the American Academy of Fixed Prosthodontics' George Moulton Award for Outstanding Achievement, the Greater New York Academy of Prosthodontics Distinguished Lecturer Award, the Greater New York Academy of Prosthodontics Schweitzer Award, the European Academy of Esthetic Dentistry John McLean Honorary Lecture Award and the first Frank V. Celenza Memorial Award from the Northeastern

Gnathological Society. He was presented with the Judson C. Hickey Scientific Writing Award om 2023 from the Journal of Prosthetic Dentistry. Dr. Malament was on the research and development teams for two different well-known ceramic products and developed instrumentation used in clinical practice.

Invited Speaker – Mariam Margvelashvili-Malament
Assistant Professor
Tufts University
Boston, MA US

Title: Survival of e. max Lithium Disilicate Restorations in Patients with Worn-Down Dentition

Abstract: The progressive shift towards minimally invasive and esthetic dentistry is obvious. The ultimate goal is to preserve as much of the tooth structure as possible and deliver tooth-colored restorations. With increased life expectancy there seems to be an increase in patients with worn-down dentition. It represents a dilemma for a clinician to choose a type of restoration, complete or partial, for these patients and whether e. max lithium disilicate provides reliable long-term prognosis. This presentation will provide an overview of the existing available evidence on the survival of restorations in patients with parafunctional habits. It will then present the results of a prospective clinical study on the survival of e. max lithium disilicate complete and partial coverage restorations in patients with parafunctional habits and worn-down dentition. The effect of clinical parameters such as type of restoration (complete or partial), dental arch, tooth position, age and sex of the participants will also be covered.

Learning Objectives:
1. To provide an overview of the existing available evidence on the survival of restorations in patients with worn-down dentition.
2. Compare the survival of e. max lithium disilicate complete and partial coverage restorations in patients with worn-down dentition.
3. Evaluate the clinical variables influencing the survival of complete and partial coverage e. max lithium disilicate restorations in patients with worn-down dentition.

Biography: Dr. Mariam Margvelashvili-Malament is a Diplomate of the American Board of Prosthodontics. She received her Certificate of Specialty in Prosthodontics with honorary distinction from Tufts University School of Dental Medicine (TUSDM). She also received her Certificate of Fellowship in Implant Dentistry from TUSDM with a distinctive International Team for Implantology (ITI) Scholarship. She holds Master of Science and Ph.D. degrees in Dental Materials from the University of Siena, Italy. She earned her first DMD degree from the Tbilisi State University, Georgia and a second DMD degree from TUSDM. Dr. Margvelashvili-Malament has published up-to 50 articles and abstracts in international, peer-reviewed journals and scientific programs; has co-authored book chapters in 4 textbooks, while she serves as a reviewer for several impact-factored dental journals. She is a fellow of the American College of Prosthodontists and Associate Fellow of the Greater New York Academy of Prosthodontics. She is a co-author of the national residency program in Prosthodontics in Georgia. She is also the Founding Chair and the author of the International Dental Program at the University of Georgia. She lectures extensively on dental implants and esthetics in national and international dental meetings. Currently, Dr. Margvelashvili-Malament serves as an Associate Professor of Prosthodontics at Tufts University School of Dental Medicine and visiting Associate Professor at the University of Georgia, Georgia. She also works in specialty prosthodontics practice

Boston Prosthodontics and her clinical expertise covers all aspects of Implant, Esthetic and Reconstructive Dentistry.

Invited Speaker – Dean Morton
Indiana University School of Dentistry
Department of Prosthodontics
Distinguished Professor and Director
Indianapolis, IN USA

Title: Contemporary Treatment and Workflow Options: Designed to Prevent and Manage Complications for Completely and Partially Edentulous Patients

Abstract: Both conventional and contemporary treatments can improve function, esthetics, and self-esteem. Unfortunately, the complexity of therapy can vary greatly, and outcomes can be inconsistent. Clinicians are challenged to avoid failure and complications, and when this is not possible manage less than satisfying treatments. Evidence-based protocols and sound principles, irrespective of workflow, minimize the occurrence and severity of complications and can help simplify management. This presentation will focus on protocols and workflows associated with both successful and unsuccessful outcomes for completely and partially edentulous patients, and how they provide the foundation for prevention or management of complications.

Learning Objectives:
1. Consider planning and treatment checklists and how these relate to prosthodontic treatment planning and the avoidance of complications.
2. Detail the provisional of care in the digital age and how to enhance confidence.
3. Introduce and detail workflow concepts designed to improve quality and predictability of outcomes.
4. Review communication between TEAM members and detail treatment procedures used in treating edentulous and partially dentate patients.

Biography: Dean Morton completed his dental training at the University of Sydney, and his Master of Science and Postgraduate Certificate in Prosthodontics at the University of Iowa. He is the Indiana Dental Association (IDA) Distinguished Professor in the Department of Prosthodontics at the Indiana University School of Dentistry (IUSD), serving also as Director of the Center for Implant, Esthetic, and Innovative Dentistry. Dr. Morton is Chairman of the ITI Center of Excellence and Scholarship programme at IUSD and is Dean for Strategic Partnerships and Innovation. Dr. Morton is a member of the Board of Councilors of the International College of Prosthodontists (ICP) and is an active fellow or member or many other organizations including the American College of Prosthodontists, the Academy of Prosthodontics, the Academy of Fixed Prosthodontics, the Academy of Osseointegration and the ITI. Dr. Morton is the sitting President of the American Board of Prosthodontics. He has published more than 120 peer reviewed articles in addition to several books, chapters, and abstracts. He serves as an Associate Editor for the International Journal of Oral and Maxillofacial Implants and lectures nationally and internationally on prosthodontics, implant, and esthetic dentistry.

Invited Speaker – Saoirse O'Toole
Clinical Lecturer in Prosthodontics
Centre for Clinical, Oral and Translational Sciences
King's College London
Visiting Associate Professor
School of Medicine, University College Dublin

Title: Monitoring Wear with Intra-Oral Scanners Part 2: What the Future Holds

Abstract: This talk will review the state of art with accuracy of digital intraoral scanners when used for intraoral diagnosis. We will discuss the opportunities and limitations of using intraoral scanners to measure clinical wear and highlight what the future holds with regards to diagnosis and the use of AI for dental monitoring. Afterwards the attendee will have learned clinical tips and tricks to improve accuracy when monitoring change, be aware of different digital tools available to them and their limitations. They will also come away informed of potential future applications and how to prepare for them now.

Biography: Dr. Saoirse O'Toole is a Clinical Lecturer at King's College London Centre for Clinical, Oral and Translational Research. Her clinical area of interest is in tooth wear, bruxism and dental sleep medicine. Her research focuses on identifying groups at high risk of disease progression and developing diagnostic tools for use in primary care. She has lectured nationally and internationally on erosive tooth wear, has published over 40 peer reviewed papers and two book chapters on tooth wear. She has an international patented device for the intraoral detection of gastric acids and has developed a freeware to detect change in sequential 3D medical scans.

Invited Speaker – Lambis Petridis
Specialist in Prosthodontics
Professor and Chair in Prosthodontics
UCL Eastman Dental Institute
London, United Kingdom

Title: Can the Implant-Abutment Interface Affect the Success of Dental Implant Treatment?

Abstract: Implant dentistry has come a long way since the realization of osseointegration a few decades ago. Numerous advances have been made regarding surfaces, designs and materials for both dental implants and prosthodontic abutments. The initial external connection evolved into hundreds of internal connections, most of them unique in geometry. The result is an abundance of dental implant systems in the market today differing in macro-design, surface characteristics, and connections. Clinicians today have a choice between hundreds of implant companies and thousands of possible implant/abutment combinations. Faced with so many choices the question is whether the implant-abutment interface plays any role in the success of dental implant treatment. How do clinicians choose the right implant systems and connections for their patients? Where does evidence and marketing meet? This lecture will present a summary of the evidence and the possible clinical implications of using various implant-abutment combinations and geometries.

Biography: Professor Petridis qualified from the Dental School of Aristotle University of Thessaloniki. He continued his studies at Tufts University, Boston, U.S.A. where he completed an Advanced Education Programme in Prosthodontics (1997) and acquired a Master of Science degree (1998). He completed his postgraduate studies with a PhD degree from Aristotle University (2001). In 2018 he became a Fellow of the Higher Education Academy (FHEA) in recognition of his teaching methods and processes. Professor Petridis served as an Assistant Professor in Prosthodontics at the Dental School of Aristotle University of Thessaloniki. He moved to London in 2012 and served as an Associate Professor in the Prosthodontic Unit at UCL Eastman Dental Institute. Since 2019 he is Professor and Chair of Prosthodontics at UCL Eastman Dental Institute. He is currently Director of the Master in Clinical Dentistry (Prosthodontics) Programme and also an Honorary Consultant at the Royal ENT and Eastman Dental Hospital. He has authored and co-authored a number of scientific papers published in international peer-reviewed journals, and has headed several past and current research projects in the field of Prosthodontics, Implants and Aesthetic dentistry. Professor Petridis has also been in private practice since 2000 and is currently an Associate at Harley Street Oral Reconstruction Centre, where he practices all aspects of dentistry with an emphasis on Restorative, Esthetic and Implant Dentistry. Professor Petridis is currently registered with the GDC in the Prosthodontics specialist list, and is also on the list of recognized specialists in Prosthodontics issued by the European Prosthodontic Association. He is a registered Speaker and Fellow for ITI, a member of the International College of Prosthodontists, the Academy of Osseointegration, the European Prosthodontic Association, the British Society of Prosthetic Dentistry, the Cochrane collaboration Oral Health Group, and an affiliate of the European Academy of Esthetic Dentistry.

Invited Speaker – Alon Preiskel
Consultant Prosthodontist, Guy's Hospital
Specialist in Dental Implants, Oral Rehabilitation and Aesthetics
London, United Kingdom

Title: Managing Occlusal Risk Factors in Immediate Implant Loading

Abstract: In the early 2000s, immediate implant loading was considered by many as risky, pointless, cowboy dentistry. Despite substantial amount of peer reviewed evidence, it was technique that some “believed” in it whilst others didn’t. Fast forward 20 years and if you were to believe dental adverts and many conference presentations, failing teeth can be swapped simply for new dental implants and implant manufacturers are making this a key part of their business strategy. This presentation will describe and discuss how occlusal and prosthetic techniques can control some of the key risks involved in providing successful treatment. It will cover fundamental differences between single unit, multiple unit and full arch restorations. The presentation will highlight the features of surgical and prosthetic design that enable the implant-prosthetic complex to resist occlusal forces and provide a favourable bio-mechanical environment for successful immediately loaded osseointegration.

Biography: Dr. Alon Preiskel is the President of the American Prosthodontics Society and visiting lecturer at King’s College Dental Institute. He is a partner at Preiskel Prosthodontics and founder of Collaborate Dental Group. His teaching experience includes serving as Consultant (Clinical Professor) Prosthodontist teaching Prosthodontic trainees at Guy’s Hospital where he himself completed his specialist Prosthodontic training. He was previously the Program Coordinator of the implant diploma at the Eastman Dental Institute London and

has completed his MBA at London Business School. Dr. Preiskel is a member of numerous dental societies and lectures frequently at national and international meetings including the American Prosthodontics Society, Academy of Prosthodontics, International College of Prosthodontics, IJP Young Prosthodontic Educators, Future Leaders in Prosthodontics and at the London Nobel Biocare symposium. Dr Preiskel sits on committees of the International College of Prosthodontics and is a reviewer for the International Journal of Implant Dentistry and the Journal of Prosthetic Dentistry.

Invited Speaker – Harold Preiskel
ICP Founding Member
Emeritus Professor of Prosthodontics
London, United Kingdom

Title: Lifetime of Learning

Abstract: "Experience is the term that experts use for their mistakes" so said Oscar Wilde. This personal experience spans a period from the hammering of swaged baseplates, through the Articulator Wars, to the whine of CAD/CAM in the digital era. Today's awe inspiring therapeutic possibilities mark a staging point on a journey encompassing technique worship, mechanical idolatry and false messiahs. The staggering improvements in worldwide communication has accelerated progress and it's fitting that our satellite ICP meeting has returned to London where its foundations were laid more than 40 years ago.

Biography: Harold Preiskel is Emeritus Professor of Prosthodontics in London. He was the first President of the ICP, one of its principal founders and was at the helm for its first nine years. He was the first non-American President of the American Prosthodontic Society, founding co-editor of the International Journal of Prosthodontics, Chairman of its Board, President of the American Dental Society of London, the British Dental Association (Metropolitan Branch), and the London Dental Study Club. In London he was Alumnus of the Year 2007 (Kings), awarded the Webb-Johnson Medallion of the Royal College of Surgeons of England 2008. In New York he was 'Distinguished Lecturer of the Year 2008' GNYAP. His was the sixth name inscribed on the Hall of Fame in Prosthodontics at Ohio State University in more than a century. He was awarded the Golden Medallion of the APS in 2016 and the British Society for Prosthodontics triennial Gold Medal in 2017 one of two clinicians ever to hold both accolades. He is a Fellow of the Academy of Prosthodontics and of the Royal College of Surgeons of England. Harold Preiskel is author of textbooks that have become standard works, he has written more than a century of scientific articles and received numerous prosthodontic awards the world over. He is still active in teaching and practice.

Invited Speaker – Thomas Salinas
Professor and Chair
Dental Specialties
Mayo Clinic
Rochester, MN USA

Title: The Ebb and Flow of Maxillofacial Prosthetic Reconstruction Trends

Abstract: Patients with defects of the jaws and face bring about significant challenges to the treatment team. The approach of sequencing and synergy from advanced techniques puts patients at a tremendous advantage when assembled in these teams. This lecture briefly presents these approaches to incorporate into present day strategies.

Biography: Thomas Salinas is Professor and Chair of Dentistry at the Mayo Clinic, where his time is dedicated to rehabilitation of patients with complex care needs. He has authored over 90 publications related to prosthodontics and interdisciplinary care. His research interests are biomaterial behavior and clinical outcome studies. He is past program director for advanced prosthodontics and has leadership roles within the clinical practice and department. He is a fellow of the ACP, Past President of AAMP and Fellow of The Academy of Prosthodontics and a Diplomate of the American Board of Prosthodontics. A native of New Orleans, he was educated at Louisiana State University Health Science Center and MD Anderson Cancer Center.

Invited Speaker – Shakeel Shahdad
Consultant and Honorary Clinical Professor
Oral Rehabilitation & Implantology
The Royal London Dental Hospital, and Barts & The London School of Medicine and Dentistry
London, United Kingdom

Title: Prosthodontic Rehabilitation of Challenging Clinical Situations with Implants

Abstract: Dental implants have been successfully utilised in rehabilitating partially dentate and edentulous patients with removable and fixed prosthetic solutions. However, replacement of multiple missing teeth due to syndromic and non-syndromic causes with implants in growing children is complex and requires lateral thinking. There are numerous anatomical or patient-related factors which require careful consideration for successful management of their oral disability. Besides, the age of intervention and timing of implant placement remains controversial. This clinical case series-based presentation will discuss and illustrate the role of early implant placement in tweens and teenagers to achieve successful functional and aesthetic outcomes.

Learning Objectives:
1. Understand the complexities of patients with severe hypodontia and anodontia
2. Discuss the advantages of early mandibular rehabilitation in physical, functional and psychological well-being of these patients
3. Understand the challenges posed by lack of alveolar development due to congenital absence of teeth

Biography: Shakeel Shahdad is a Consultant and Honorary Clinical Professor in Oral Rehabilitation & Implantology at The Royal London Dental Hospital, and Barts & The London School of Medicine and Dentistry. He is the Clinical Lead for Restorative Dentistry, Lead for postgraduate implant training and Chairman of ITI Scholarship Centre at QMUL. He is a Fellow of the International Team for Implantology. He is also the Chairman Emeritus for the Advisory Board in Implant Dentistry for the Royal College of Surgeons of Edinburgh and the ITI UK & Ireland Section. In 2017, he was conferred Fellowship of the Faculty of Dental Trainers (FFDTEd) by The Royal College of Surgeons of Edinburgh. He is a specialist in Restorative Dentistry, Periodontics, Prosthodontics and Endodontics. Apart from the specialist restorative treatment, his areas of particular interest include aesthetic implant dentistry and management of complex restorative cases including functional and aesthetic rehabilitation of patients with congenital absence of teeth and toothwear. Shakeel specializes in treating patients requiring complex and advanced restorative treatment including surgical placement and restoration with dental implants. He is active in clinical research and has secured various research grants. He is a co-author of a textbook in periodontology and implant dentistry, besides publishing in peer-reviewed journals. He also runs a multi-specialist referral practice in the West End of London.

Invited Speaker – Ami Smidt
Professor
Department of Prosthodontics
The Hebrew University-Hadassah, School of Dental Medicine
Jerusalem, Israel

Title: Key Aspects in Comprehensive Prosthodontic Dental Treatment: Decision Making in the Digital Age

Abstract: Restoring lost tissues or proactively preserving them is a complex and unpredictable task. Merely placing a dental implant does not provide a complete solution to this challenge. This issue becomes particularly critical in cases involving the anterior region, where long-term complications may arise. The labial bundle bone, a root-related structure, is susceptible to losing its coronal thin portion due to inadequate blood supply. Augmenting the marginal labial bone volume is essential for restoring proper anatomy, whether for implant-supported or pontic restorations. The behavior of the anterior buccal bone prompts a reevaluation of the broader use of dental implants, urging a greater emphasis on retaining natural teeth, even in compromised cases, as the primary choice across all oral areas. In cases of extensive periodontal damage, the decision to extract and subsequently place an implant requires careful consideration, particularly in interdental spaces where bone growth presents challenges. Exploring alternatives, such as retaining a root from a multirooted tooth, hemisection, or orthodontically moving a hopeless root to facilitate bone development before the prosthetic phase, should be thoroughly discussed as part of the decision-making process. This presentation aims to delve into the complexities of decision-making in comprehensive prosthodontic treatment planning within the context of modern digital techniques. It will address the intricacies of timing, therapy sequencing, and the multidimensional dilemmas that clinicians encounter."

Biography: Professor Ami Smidt is a Professor of Prosthodontics in the Department of Prosthodontics at The Hebrew University-Hadassah, School of Dental Medicine, Jerusalem, Israel. He received his D.M.D. degree from Jerusalem's Hebrew University and his M.Sc. degree in Oral Microbiology (Cum Laude). He received his certificate in Prosthodontics and became a Diplomat of the Israeli Board of Prosthodontics and held teaching, research, and clinical positions at this University. Professor Smidt headed the Center for Graduate Studies in

Prosthodontics in the school from 2003 to 2017 and currently teaches students in the senior clinical years. Over the years, Professor Smidt appeared several times in the Hebrew University's annual list of best teachers based on students' surveys. Professor Smidt has published extensively and serves as a member on the editorial review boards of several international publications. He lectures extensively in international forums on topics related to interdisciplinary comprehensive prosthodontic treatment planning combining orthodontics and periodontics for better functional and esthetic results including dental implants. His current research focuses on improving prosthodontic procedures based on pre-surgical and orthodontic preparations. Professor Smidt served as President and Editor of the Israel Society of Prosthodontics, is a member of several professional organizations and a board councilor of The International College of Prosthodontists. Prof. Smidt maintains a private practice dedicated to comprehensive prosthodontics and esthetic dentistry in Tel Aviv, Israel. Ami Smidt Joined the International College of Prosthodontists in 1996 as a constituent member. He served and was active as a member in many of the ICP's board committees throughout the years and joined the ICP Board of Counselors in 2013. Ami Smidt was a faculty member of the Young Prosthodontist Education workshops, an important joint project sponsored by the ICP and the Akademie of Karlsruhe, Germany, headed by George Zarb, for increasing the involvement of young prosthodontists in education and teaching and strengthen their ties with the college. Ami Smidt joined all ICP bi-annual meetings since joining the organization and presented extensively in these meetings. He represented the ICP in the last 2 ICP mutual meetings in Riccione Italy with the Italian Prosthodontic Society and in Dalaman, Turkey with the Turkish Prosthodontic and Implant Society. The ICP board of counselors voted unanimously to nominate Ami Smidt as the first recipient of The ICP Lifetime Achievement Award for special contribution to Prosthodontics internationally and for special contribution and devotion to The International College of Prosthodontists.

Invited Speaker – Murali Srinivasan
Chair, Clinic of General, Special Care and Geriatric Dentistry
Director, Center of Dental Medicine
University of Zurich
Zurich, Switzerland

Title: Complete Dentures 2023: Fully Digital?

Abstract: Rehabilitation of completely edentulous jaws with conventional removable complete dentures (CDs) is a well-established treatment protocol and over half a century, the conventional flask-pack-press or compression molding method has been used to fabricate removable complete dentures. However, these traditional methods have undergone a remarkable transformation in the recent years following the introduction of computer-aided design and computer-aided manufacturing (CAD-CAM) procedures for CDs. Fabrication of CDs using the CAD/CAM technology had been first reported in the early 90's, but only in the last decade has this technique gained an exponential popularity. The incorporation of CAD-CAM in the complete denture fabrication has changed the laboratory processes as well as modified the conventional clinical protocols. The new CAD-CAM protocols have considerably decreased the treatment burden to the patient, by effectively reducing the treatment time, number of clinical visits, and costs. The CAD-CAM dentures offer numerous advantages including better retention, mechanical- and surface properties but, most importantly, by preserving a digital record. The current lecture aims to provide an overview of the current status in the evolution of CAD-CAM digital dentures.

Biography: Prof. Dr. Murali Srinivasan is the Director of the Center of Dental Medicine at the University of Zurich. He is also the chair of the Clinic of General-, Special care-, and Geriatric Dentistry. Professor Srinivasan has received many awards in the field of prosthodontic and geriatric research. He has served formerly as the president of the European College of Gerodontology. Currently, he serves on the board of the Swiss Society of the Geriatric and Special care dentistry and was recently elected as the Vice-President of the Geriatric Oral Research Group of the International Association of Dental Research (IADR-GORG). Prof. Srinivasan's current focus is on the clinical applications of CAD/CAM technology in removable prosthodontics and geriatric dentistry.

Invited Speaker – Thomas D. Taylor
Professor and Head
Department of Reconstructive Sciences and Chairman
Division of Prosthodontics
University of Connecticut School of Dental Medicine
Farmington CT USA

Title: Dental Implants and Occlusal Overload: What's the Risk?

Abstract: Opinions vary widely as to what effect occlusion has on the long-term success of dental implants. On one hand we have clinicians who feel that we must shield our implants from excessive load. On the other hand, others feel that it's simply impossible to overload an implant. The truth is probably somewhere in between these extremes. This presentation will focus on the available evidence and will attempt to make some sense out of it.

Learning Objectives:
1. Have a clear perception of the risk factors associated with implant occlusion.
2. Be able to evaluate those risk factors when treatment planning patients.
3. Understand how implant design impacts the potential for fatigue loading under function.

Biography: Dr. Taylor holds the Endowed Thomas D. Taylor Chair of Prosthodontics and is professor and head, Department of Reconstructive Sciences and chairman, Division of Prosthodontics at the University of Connecticut School of Dental Medicine. He is involved in both clinical and laboratory research and has published extensively in the prosthodontic literature. He is a past editor of the International Journal of Oral and Maxillofacial Implants and past president of the International College of Prosthodontists. He is also past president of the Academy of Prosthodontics, the American College of Prosthodontists, the International Team for Implantology (ITI) and the Greater New York Academy of Prosthodontics. Dr. Taylor served as executive director of as well as being president of the American Board of Prosthodontics.

Invited Speaker – Arzu Tezvergil-Mutluay
Specialist in Prosthodontics and Clinical Dentistry
Professor and Chair, Department of Cariology and Restorative Dentistry
Institute of Dentistry, University of Turku, Finland
Honorary Professor in Applied Oral Sciences and Community Dental Care
Hong Kong University

Title: Contemporary Adhesive Strategies for Direct and Indirect Restorations

Abstract: Over the past few decades, the introduction of adhesive techniques in conjunction with esthetic restorative materials has profoundly transformed treatment paradigms within prosthodontics. The primary objective of adhesive procedures is to establish a strong and long-lasting bond between dental restorations and tooth structures. This involves successful integration of restorative materials with dental hard tissues through adhesive techniques, resulting in the formation of a complex biomechanical entity. In contemporary prosthodontics, dental practitioners are privileged to wield a diverse array of materials that are tailored for various modes of dental restorations, spanning from direct applications to chairside (semi-direct) and indirect methodologies. This presentation focuses on distinct clinical strategies encompassing adhesive restorative procedures, offering insights into the key factors in achieving successful outcomes.

Biography: Dr Arzu Tezvergil-Mutluay is a specialist in prosthodontics, and holds the position of Full Professor and Head of Department of Cariology and Restorative Dentistry at the Institute of Dentistry, University of Turku, Finland. She practices and serves also as a senior consultant at Turku University Hospital. She is also the group leader of Adhesive Dentistry Research Group at Biomaterials and Medical Device program at Biocity, Turku Dr Tezvergil-Mutluay has authored over 100 peer reviewed journal articles, lectures nationally and internationally, she is the editorial board member of several well-recognized journals and member of multiple professional associations. Her scientific and educational interests include minimal invasive adhesive restorations, dental materials including fiber-reinforced composite materials, high-strength ceramic materials, adhesive bonding and luting cements. Her clinical practice focuses on most aspects of prosthodontics with currently main focus on the oral rehabilitation of cancer patients, dry mouth patients and wear patients as well as sleep apnea patients. Her current research is supported by funding from National funding agencies.

Invited Speaker – Meriting G. Thokoane
Head Clinical Unit
Department of Prosthodontics
School of Oral Health Sciences
University of the Witwatersrand
Johannesburg, Gauteng South Africa

Title: Our Reality Our Challenges Our Inspiration

Abstract: The presentation will highlight the public health plight of patients with head & neck cancers (HNC) and personnel who must manage these conditions, specific to Low and Middle-income countries. Globally HNC are on the increase particularly in Lower Developed Countries which account for over 60% of HNC globally and over 80% cancer-related mortality. Cancer-related disability is reported to affect 25% of HNC survivors and less than 12% of other cancer survivors. What protocols guide the management of HNC patients? What can we do to

improve the status quo? The current situation is dire and needs a revolution to curtail a volcano about to erupt.

Biography: A Prosthodontist with two decades teaching experience undergraduate & postgraduate levels. Supervised & examined research reports. Published articles in peer reviewed journals locally & internationally. Participated in conference presentations globally. Passionate about Maxillofacial Prosthodontics & Public Health, always exploring ways to improve quality for those I serve: Patients & Students in accordance with the evolution of Prosthodontics. Co-author & only African in a collaboration of 17 international females only text book (the first female-only publication in dentistry.

Invited Speaker – Frank J. Tuminelli
Diplomate & Director, American Board of Prosthodontics
Director, Graduate Prosthodontics VA NY Harbor Healthcare System
Clinical Assistant Professor, Hofstra Northwell School of Medicine
NY USA

Title: The Evolution of Full-Arch Implant Dentistry… Our Journey to a Digital Future

Abstract: The magnitude of edentulism is worldwide is a challenge to the dental profession. One that has taken an enormous emotional and systemic toll on the health of our patients. This is well documented in the literature and has illustrated the ability of the dental profession to address this epidemic presents obstacles. Historically, four decades of implant therapy for this population has seen the therapeutic pendulum shift numerous times, yet the overriding fact is, it has not substantially reduced the magnitude of the problem. In the management of the edentulous patient the dental team must consider numerous factors: surgical options, skeletal fixation sites, implant systems, immediate function, treatment time, and finances. These are targeted to deliver optimum results. The presentation will explore the management of the completely edentulous patient and the terminal dentition. A historical look back will serve as a backdrop for the decisions we make today, based on what we have learned. The rationale for immediate load / immediate function with full arch implant restorations, as a primary choice, will be emphasized. Illustrating the goal of comprehensive care to restore quality of life will be the focus. Literature supported protocols, and the emergence of new technology will be explored as a possible paradigm shift enabling comprehensive treatment to address this complex issue.

Learning Objectives:
1. Be familiar with the magnitude of edentulism and its systemic impact.
2. Understand the historical principles that remain pertinent today.
3. Understand the synergistic surgical and prosthetic pathways.
4. Understand the choices available to achieve predictable, optimal results.

Biography: Dr. Frank J. Tuminelli received his Dental Degree and specialty training in Prosthodontics from Fairleigh Dickenson University School of Dental Medicine. Dr. Tuminelli is a Diplomate and Director, of the American Board of Prosthodontics and is currently the Program Director of the Advanced Education Program in Prosthodontics at the Manhattan Veterans Administration, New York campus. He served as Program Director for Graduate Prosthodontics, New York Presbyterian Hospital at Queens from 2010 – 2016, and as the Program Director of Advanced Prosthodontics and Implantology, for the NSHLIJ Health System 2000 -2010 He is a past President of the American College of Prosthodontists, and

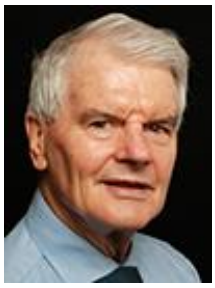
The Greater New York Academy of Prosthodontics. He serves as the Chair, and American College of Prosthodontists (ACP) Commissioner to the National Commission on Dental Specialty Recognition. Dr. Tuminelli is a clinical assistant professor in the Department of Dental Medicine at the Hofstra Northwell School of Medicine, and adjunct clinical assistant professor NYU School of Dentistry. He served as the Team Dentist for the New York Islanders 2002-12. He lectures nationally and internationally, presenting over 70 invited lectures. He has contributed to the scientific literature authoring / coauthoring multiple scientific papers. Dr Tuminelli is the recipient of the 2017 Educator of the Year Award from the ACP. He maintains a private practice limited to Prosthodontics on Long Island and in New York City.

Invited Speaker – Sachin Varma
Consultant in Prosthodontics
Guys and St Thomas' Hospital Trust
London, United Kingdom

Title: Implants in Clinical Practice: Challenges, Complications, and Solutions

Abstract: Implants are commonplace in general practice with the role of the prosthodontist changing constantly. Implants in a Prosthodontic practice have evolved such that the Prosthodontist is now expected to take on surgical cases. As an observation from the speaker, more complex referrals are coming in with a particular emphasis on implant complications as well. There is a particular emphasis on what type of cases should a prosthodontist be taking on, and how to work in a specialist practice as part of a multidisciplinary team. This talk outlines certain clinical cases showing the challenges experienced in a Specialist Prosthodontic Practice. Dilemmas in clinical options in respect to the financial considerations, compromised scenarios and taking on referrals are discussed. There is a particular focus on the clinical aspects in regard to implant prosthodontics.

Biography: Dr Sachin Varma is a Consultant in Prosthodontics at Guys and St Thomas' Hospital Trust. He has been a Specialist in Prosthodontics since 2007 Sachin plays an active role there in training both postgraduate and undergraduate dentists. He has a vast knowledge and experience in implant dentistry and takes great pleasure in sharing his skills. As well as his teaching commitments, Sachin takes pride in providing specialist treatment in Prosthodontics including implants, crowns, bridges and dentures at his specialist referral practices based in Windsor and Surrey. He pays particular attention to the cosmetic, yet functional and realistic aspects of Prosthodontics.



Invited Speaker – Terry Walton
Professor
School of Dentistry
Faculty of Medicine and Health
University of Sydney
Sydney, NSW Australia

Title: The Evolution of the Implant-Abutment Interface – R.I.P. the External Hex?

Abstract: Brånemark introduced the external hexagon (ex-hex) implant platform for fully edentulous patients, but osseointegrated implant dentistry soon expanded to include single tooth and segmental tooth replacement. This was accompanied with the introduction of the internal connection implant platform of various geometries. Subsequently, the ex-hex is largely seen as redundant. But is this a result of good science or group think. This presentation will explore the evolution of the implant-abutment connection – the associated micro gap, bacterial percolation, marginal bone loss and mechanical stability. It would appear the science is settled and the internal connection platform has significant advantages over the ex-hex. So should the ex-hex be confined to history? But how reliable is the science? Are there still indications for the ex-hex?

Biography: Dr Terry Walton graduated Bachelor of Dental Surgery and Master of Dental Science from the University of Sydney in 1974 and 1979 respectively; Master of Science (Prosthodontics) from the University of Michigan in 1981 and Doctor of Dental Science from the University of Sydney in 2013. Dr Walton has been in Specialist Prosthodontist practice in Sydney since 1983 and holds the title of Professor Affiliate in Clinical Dentistry in the Faculty of Medicine and Health at the University of Sydney. He teaches postgraduate students at both the University of Sydney and the University of Queensland. He is a member of many Australian and International dental organisations including the International College of Prosthodontists of which he was co-president in 2000-2001 during 2000 and 2001, The International College of Dentists and the Pierre Fauchard Academy. He is a reviewer for several journals. Dr Walton has been involved in practice-based clinical research into the long-term outcome and patient evaluation of tooth and implant-supported dental prostheses. He was awarded a Member of The Order of Australis for services to dentistry in 2007.

Invited Speaker – Nicola Zitzmann
Professor, Chair
Department of Reconstructive Dentistry
University of Basel
Basel, Switzerland

Title: Implant Retreatment

Abstract: Single-tooth implants in the maxillary anterior region have the highest risk of esthetic complications from infrapositioning due to continuing maxillary growth and the eruption of adjacent teeth. The placement of anterior single-tooth implants should normally be postponed, particularly in young women with a hyperdivergent growth pattern. If an infraposition of an implant is present, thorough examination and strategic planning are required. According to the severity, the strategic treatment options are as follows: simple retention, adjustment or replacement of the implant restoration, possibly including adjacent teeth, surgical implant repositioning by segmental osteotomy combined with osseodistraction, or submergence or removal of the implant. The strategic concept is illustrated with clinical cases.

Biography: Nicola Zitzmann is Professor and Chair of the Department of Reconstructive Dentistry at the University of Basel, Switzerland, and is a research group leader within the Department of clinical research (DKF). From 1994 to 1997, she received her postgraduate training at the Department of Fixed and Removable Prosthodontics and Dental Material Sciences in Zurich, Switzerland (Prof. P. Schärer). From 1997, N. Zitzmann worked as Assistant Professor at the Department of Fixed and Removable Prosthodontics and TMJ Disorders at the University of Basel (Switzerland) and completed her habilitation thesis (equivalent to Ph.D.) entitled “Prosthodontic treatment of the edentulous patient with particular consideration given to implant-supported restorations” in 2004. Nicola Zitzmann has been a Visiting Assistant at the Department of Periodontology at the University of Göteborg, Sweden (Proffs. J. Lindhe and T. Berglundh), and achieved her Ph.D. degree in the field of Periodontology in 2006. She is past-president of the International College of Prosthodontics, chaired the ITI section Switzerland until 2021, and is board member of the Swiss Society of Oral Implantology (SGI) and the Swiss Society of Reconstructive Dentistry (SSRD). N. Zitzmann is an associate editor of Clinical Oral Implants Research and authored more than 160 original publications, 80 papers and book chapters. She received the Jan Lindhe Research Award in 2014 for her scientific achievements in implant dentistry.

2023 Oral Presentations

PATIENT AND DENTIST ACCEPTABILITY OF A NEWLY DEVELOPED WHEELCHAIR RECLINER FOR GERIATRIC AND SPECIAL CARE NEED PATIENTS

Bhaskar Agarwal[1], Abhinav Shekhar[2], Srishti Agarwal[3]
[1]King George's Medical University, Lucknow, India. [2]Sardar Patel Post graduate Institute of Dental and Medical Sciences, Lucknow, India. [3]Dental O3, Lucknow, India

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

Patients with movement disability are often wheelchair bound. Transfer of these patients from wheelchair to dental chair is bothersome and is a significant barrier in their dental service utilization. The authors have devised an automated wheel chair recliner that helps to mimic dental chair functioning with wheelchair itself.Our aim was to measure the performance and acceptability of wheel chair recliner among patients and dental practitioners.

Materials & Methods

A total of 100 wheelchair bound adult patients (aged >21 years) and 50-dental practitioners evaluated for acceptability of the recliner. The patients were assessed using on eight items covering patient comfort/acceptability related with positioning, reclining, repositioning, fear of fall, joy, discomfort, perception regarding dentist's discomfort and use in future on a scale of 0 to 4 with 0 indicating least satisfying and 4 indicating most satisfying experience. The dental practitioners were evaluated on 7-items, with respect to handling, positioning, reclining, operability, design esthetics, working area needs and perception of safety using a 10-point scale. The patient and dentist experience was graded as poor, fair, good, very good and excellent. Chi-square test and ANOVA was used to compare the results.

Results

On a 4-point scale mean scores of patients ranged from 2.47±1.23 (Positioning) to 3.40±0.74 (Willingness to use in future). Out of a total possible score of 32, 2% patients had total scores indicative of poor (score <16), 18% had fair (score 17-20), 37% had good (score 21-24), 39% had very good (score 25-28) and 3% had excellent (Score >28). Mean total score was 23.42±3.11. Majority of dentists were graduates (52%). Among different specialist categories maximum were prosthodontist or orthodontist (n=5; 10% each). Majority were in individual practice (52%). Mean scores on a 10-point scale ranged from 2.47±1.23 (handling) to 3.40±0.74 (perception of safety). Mean total scores were 45.98±3.81. Majority (78%) had acceptability score graded as good (score 42-56) remaining 22% had scores graded as fair (score 35-42). None of the dentist characteristics showed a significant association with total scores.

Conclusions

The acceptability rate was good to very good in dental practitioners as well as patients

irrespective of profile of patient or dentist. The use of wheelchair recliner could be recommended in routine clinical practice.

Keywords
SPECIAL CARE NEED, GERIATRIC, WHEELCHAIR RECLINER

AN INTERNATIONAL RESPONSE TO THE MANAGEMENT OF UNKNOWN DENTAL IMPLANTS

Kiran Amin, Haralampos Petridis
Eastman Dental Institute, London, United Kingdom

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

The accessibility of patient implant information is crucial to enable restoration and maintenance of dental implants. Without available documentation, implants can be regarded as 'unknown' resulting in challenges with identification and management.

With a growing dental implant market, as well as the impact of dental tourism and clinician and patient mobility, the management of unknown dental implants may be an increasing issue for patients and clinicians. There is currently a paucity of studies looking at this important clinical issue.

The aim was therefore to undertake an international survey of dentists to explore their opinions, experience and management of unknown dental implants.

Materials & Methods

A survey questionnaire was designed and refined using UCL Opinio (ObjectPlanet) after a preliminary pilot study and ethical approval. Participants were recruited by approaching various dental associations worldwide of which over 20 aided with survey dissemination, as well as the use of online forums, newsletters, websites and journals. Data collected were analysed for associations using the Fisher-Freeman-Halton Exact test. Bonferroni corrections were also used during pair-wise comparisons. A p-value of less than 0.01 was regarded as statistically significant to reduce the risk of obtaining spuriously significant results due to multiple hypothesis testing and to ensure conclusions were as robust as possible.

Results

Nine hundred and ninety-six respondents from 71 countries participated.

A third of respondents encountered unknown dental implants at least monthly. A minority (2.9%) had never encountered them. If an intervention was required, 20% would explant and 77.9% would attempt to identify the implant, with the majority using websites aimed at identification (72.5%). The main challenges in identification were lack of support (63.4%),

inability to identify (56.7%) and discontinuation of the implant system (56.1%). The majority agreed to some extent, that managing unknown dental implants is a major problem.

Thirty percent of respondents did not provide patients with implant documentation. The majority (62.1%) were not aware of dental implant registers with only 13.3% having used one. Of those who previously have used a dental implant register 80.6% were willing to utilise one in the future ($p<0.001$). Only 5.9% reported they would not utilise one.

Conclusions

Within the limitations of the study, the results of this survey revealed that unknown dental implants are prevalent globally and they present with challenges associated with their identification and management. The frequency of encountering them did not differ significantly between geographical locations. The majority, deemed their management to be a major problem which was significantly associated with the frequency of encountering them ($p=0.003$) however was independent of socio-demographics and experience.

A substantial percentage of respondents did not provide patients with implant documentation. A minority of respondents were aware of dental implant registers of whom a small percentage (32.6%) had used one ($p<0.001$). Both awareness and use varied with geographical location.

Keywords

Unknown dental implants, opinions, experience, challenges, management, identification, documentation, dental implant register/registry

---

AN IN-VITRO STUDY OF ACCURACY OF PARTIAL DENTURE FRAMEWORKS FABRICATED USING CONVENTIONAL AND DIGITAL WORKFLOWS

Abdelrahman Badarneh[1], Sunyoung Ma[2], Joanne Choi[2]
[1]Jordan University of Science and Technology, Irbid, Jordan. [2]University of Otago, Dunedin, New Zealand

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

To compare and assess the accuracy of fit of partial denture frameworks fabricated using conventional technique and CAD/CAM technologies.

Materials & Methods

Four production methods (conventional Co-Cr casting, 3D-printed framework pattern then conventional casting, laser sintering (LS) and PEEK milling) were used to produce a group of ten frameworks (total n = 40 frameworks) for a Kennedy class III maxilla. Optical scans of the frameworks and the master model were aligned using a computer software (Geomagic Control)

using best-fit alignment based on a third scan of the frameworks while fitted on the master cast to reflect their actual clinical fit. The gap between the intaglio surface of the framework and the master cast were measured at multiple selected points using the same software. Measured mean gaps (MG) were statistically analysed using a Kruskal-Wallis one-way ANOVA at p<0.0.

Results

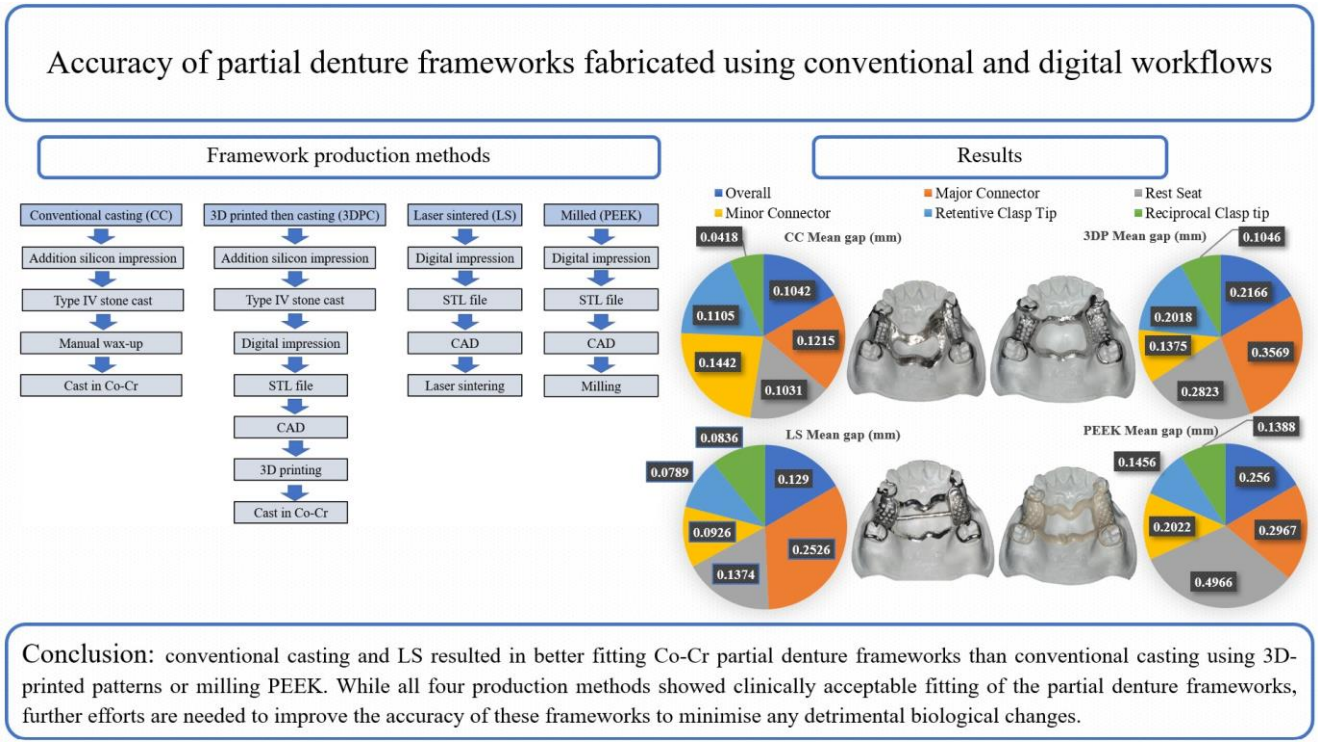
The conventional casting showed the lowest MG (0.1042mm), followed by LS (0.1290mm), 3D-printed-casted (0.2166mm) and PEEK (0.2560mm) groups. The difference in the MG between the conventional casting and LS groups was statistically insignificant (p=0.398); however, both groups performed better than the PEEK group (p<0.001). The conventional casting group resulted in much less MG than 3D-printed-cast group (p<0.001) whereas the LS group and 3D-printed-casted group had statistically insignificant differences (p=0.306). The 3D-printed-casted group performed similar to the PEEK group (p=0.335). The highest MG was at the major connector for all groups except the PEEK group. The best fitting part was at the reciprocal arm tip regardless of the technique used. The difference in the MG between all groups was the smallest at the minor connectors. PEEK milling group resulted in the poorest fitting frameworks; however, it was still within the clinically acceptable range, except at the rest seat areas.

Conclusions

Within the limitations of this study, conventional casting and LS resulted in better fitting Co-Cr partial denture frameworks than conventional casting using 3D-printed patterns or milling PEEK. While all four production methods showed clinically acceptable fitting of the partial denture frameworks, further efforts are needed to improve the accuracy of these frameworks to minimise any detrimental biological changes.

Keywords

Removable partial denture, Digital workflow, Laser sintering, 3D printing, milling, Peek



ACCURACY OF IMPLANT MILLED FRAMEWORKS FABRICATED WITH INTRAORAL SCANS AND PLASTER IMPRESSIONS: A CLINICAL STUDY

Francesco Bagnasco[1], Nicolò Pancini[2], Francesco Pera[2], Paolo Pera[1], Paolo Pesce[1], Maria Menini[1]
[1]University of Genoa, Genoa, Italy. [2]University of Turin, Turin, Italy

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

Making an accurate dental impression is a crucial step in any implant treatment. Impression procedures on implants traditionally involve the use of impression copings or transfers. However, using modern technology, it is now possible to eliminate this step and follow digital workflows for the creation of implant-supported prostheses.

Few published studies have clinically evaluated intraoral scanners (IOS) in full-arch implant-supported rehabilitations.
The aim of the present clinical trial was to investigate the trueness of a new IOS in completely edentulous patients rehabilitated with four to six implants per dental arch.
In particular, the aim was to compare the accuracy of milled metal frameworks realised on the base of a new IOS, with those realised using the plaster impression technique already validated in many years of clinical use for the manufacturing of full-arch implant-supported frameworks.

Materials & Methods

We took 11 scans (8 of the maxilla, 3 of the lower jaw) on a sample of nine patients previously rehabilitated with fixed full-arch screw-retained prostheses following the Columbus Bridge Protocol (CBP) with four to six implants since at least 4 months. Two impressions were taken for each dental arch: one analogic plaster impression using pick-up copings and an open tray technique and a second one using an IOS. Two milled metal substructures were realised. The precision and passivity of the substructures were clinically analysed through Sheffield test and endo-oral radiographs. Laboratory scans of the plaster casts obtained from the IOS and of the plaster casts obtained from traditional impression were compared with the intraoral scans following Hausdorff's method and an industrial digital method of optical detection to measure discrepancies. A Mann–Whitney test was performed in order to investigate average distances between surfaces after the superposition.

Results

The Sheffield test demonstrated an excellent passivity of the frameworks obtained through both the digital and the analogic method. In 81.81% of cases (n = 9) both substructures had a perfect fit with excellent passivity, while in 18.18% (n = 2) of cases the substructures were found to have a very slight discrepancy. From the radiographic examination, no gaps between the frameworks and the implant heads or multiunit abutments were observed, with 100% accuracy. By superimposing digital files of scans according to Hausdorff's method, a statistically significant discrepancy (p = 0.006) was found between the digital scans and the digital models

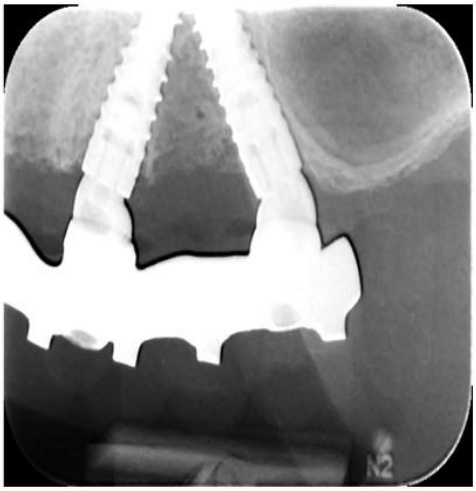
obtained from plaster impressions. Three-dimensional optical detection found a mean discrepancy of 0.11 mm between the analogic cast and the cast derived from the digital impression.

Conclusions

This is the first clinical study to investigate the accuracy of milled frameworks in patients treated with full-arch implant-supported rehabilitations obtained via digital scanning and plaster impressions.
In the present study, both digital and analogic impressions led to excellent clinical fit when coupled with the laboratory luting technique in order to cement implant cylinders to milled frameworks.
In the present clinical investigation, impressions were taken at healed implant sites. Future studies will evaluate if IOS can be considered predictable in full-arch rehabilitations immediately after implant insertion. The present results suggest that the intraoral scan could be used on healed gingiva, making it a reliable tool for the manufacturing of the final full-arch implant-supported prosthesis.

Keywords

Dental implants; Digital impression; Intraoral scanner; Full-arch; Accuracy



TOOTH EXTRACTIONS PRIOR TO CHEMORADIATION OR BIORADIATION ARE ASSOCIATED WITH WEIGHT LOSS DURING TREATMENT FOR LOCALLY ADVANCED OROPHARYNGEAL CANCER

Doke Buurman[1], Anna Willemsen[1], Caroline Speksnijder[2], Laura Baijens[1], Ann Hoeben[1], Frank Hoebers[3], Peter Kessler[1], Annemie Schols[1]
[1]Maastricht UMC+, Maastricht, Netherlands. [2]UMCU, Utrecht, Netherlands.
[3]Maastro, Maastricht, Netherlands

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

Prior to radiotherapy combined with chemotherapy (CRT) or biotherapy (BRT) for oropharyngeal squamous cell carcinoma (OPSCC), teeth with poor prognosis that pose a risk for post-RT osteoradionecrosis (ORN) are removed. The effect of tooth loss on body weight loss and tube feeding (TF) dependency during CRT/BRT is unknown. This study aimed to evaluate the effect of incomplete dentition, tooth extractions prior to CRT/BRT, and the subsequent loss of functional units on: (1) weight loss during CRT/BRT and (2) the need for TF during CRT/BRT for OPSCC.

Materials & Methods

OPSCC patients treated with CRT/BRT between 2013 and 2016 were included in this retrospective cohort study. Dental status was determined during the dental assessment at first visit and after tooth extractions prior to the start of CRT/BRT. Weight loss during CRT/BRT was scored dichotomously, comparing weight loss >5% to stable or increased weight. Potential factors associated with weight loss were identified, including patient, tumor, and treatment characteristics.

Results

Seventy-seven OPSCC patients were included. Forty patients (52%) experienced weight loss >5% during CRT/BRT. Extractions were performed in 66% of the OPSCC patients. The mean number of extracted teeth was 4.1± 5.6 per patient. Tooth extractions prior to CRT/BRT were associated with weight loss >5% during CRT/BRT (HR 1.130 (95% CI 1.011-1.262), p=0.031). None of the dental status-related parameters showed any significant associative value for TF during CRT/BRT.

Conclusions

Pre-CRT/BRT tooth extractions intended to reduce the risk of ORN, are a risk factor for weight loss during CRT/BRT for OPSCC.

Keywords

Oropharyngeal cancer, weight loss, chemoradiotherapy, tooth extraction, tooth loss, dental focal infection.

IDENTIFICATION OF METABOLIC FINGERPRINTS IN SEVERE OBSTRUCTIVE SLEEP APNEA USING GAS CHROMATOGRAPHY–MASS SPECTROMETRY

Pooran Chand, Mohit, Sunit Kumar Jurel, Raghuwar Dayal Singh, Ashutosh Srivastava, Ram Awadh Singh Kushwaha
King George's Medical University, UP, Lucknow, Lucknow, India

Research Presentation

Topic: Biology in Prosthodontics

Purpose / Aim

This study aims to identify novel metabolic biomarkers associated with severe OSA.

Materials & Methods

In total, 50 cases of OSA patients (49.74 ± 11.87 years) and 30 controls (39.20 ± 3.29 years) were included in the study. According to the polysomnography reports and questionnaire-based assessment, only patients with an apnea–hypopnea index (AHI >30 events/hour) exceeding the threshold representing severe OSA patients were considered for metabolite analysis. Plasma metabolites were analyzed using gas chromatography–mass spectrometry (GC-MS).

Results

A total of 92 metabolites were identified in the OSA group compared with the control group after metabolic profiling. Metabolites and their correlated metabolic pathways were significantly altered in OSA patients with respect to controls. The fold-change analysis revealed markers of chronic kidney disease, cardiovascular risk, and oxidative stress-like indoxyl sulfate, 5-hydroxytryptamine, and 5-aminolevulenic acid, respectively, which were significantly upregulated in OSA patients.

Conclusions

Identifying these metabolic signatures paves the way to monitor comorbid disease progression due to OSA. Results of this study suggest that blood plasma-based biomarkers may have the potential for disease management.

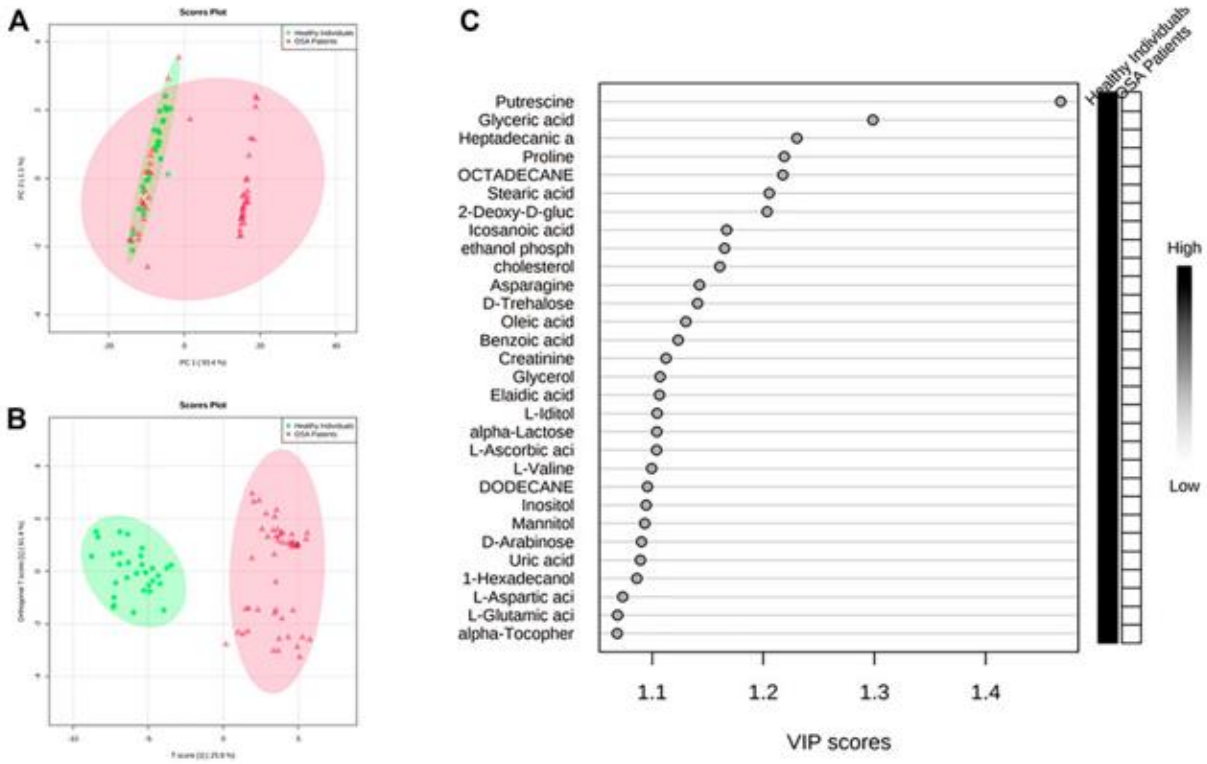
Objective: Obstructive sleep apnea (OSA) is considered a major sleep-related breathing problem with an increasing prevalence rate. Retrospective studies have revealed the risk of various comorbidities associated with increased severity of OSA. This study aims to identify novel metabolic biomarkers associated with severe OSA.

Methods: In total, 50 cases of OSA patients (49.74 ± 11.87 years) and 30 controls (39.20 ± 3.29 years) were included in the study. According to the polysomnography reports and questionnaire-based assessment, only patients with an apnea–hypopnea index (AHI >30 events/hour) exceeding the threshold representing severe OSA patients were considered for metabolite analysis. Plasma metabolites were analyzed using gas chromatography–mass spectrometry (GC-MS).

Results: A total of 92 metabolites were identified in the OSA group compared with the control group after metabolic profiling. Metabolites and their correlated metabolic pathways were significantly altered in OSA patients with respect to controls. The fold-change analysis revealed markers of chronic kidney disease, cardiovascular risk, and oxidative stress-like indoxyl sulfate, 5-hydroxytryptamine, and 5-aminolevulenic acid, respectively, which were significantly upregulated in OSA patients.

Conclusion: Identifying these metabolic signatures paves the way to monitor comorbid disease progression due to OSA. Results of this study suggest that blood plasma-based biomarkers may have the potential for disease management.

Keywords: Obstructive sleep apnea, Metabolic biomarkers, Mass spectrometry, Gas chromatography



Discrimination through principal component analysis (PCA) and ortho partial least square discriminant analysis (OPLS-DA) of the metabolites patterns in controls and patients affected by OSA **(A)** PCA and **(B)** OPLS-DA plots that allowed groups discrimination by virtue of the first two components (PCs); **(C)** VIP scores of the OPLS-DA analysis.

PROSTHODONTIC OUTCOMES FOR IMPLANT SYSTEM CONNECTIONS SUPPORTING SINGLE-UNIT IMPLANT CROWN RESTORATIONS: A SYSTEMATIC REVIEW

Garima Charan
UCL Eastman Dental Institute, London, United Kingdom

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To systematically identify, appraise and compare the clinical evidence for prosthodontic complications of different implant connections, supporting implant-supported single crown restorations.

Materials & Methods

A systematic review was conducted according to PRISMA guidelines. The structured search was undertaken for relevant literature published between January 1995 and July 2022, in English, Spanish or Portuguese, reporting on prosthodontic complications for implant-supported single crown restorations, in which the implant connection was detailed. Two independent reviewers selected studies according to predetermined criteria for phases one and two of the screening process. Quality appraisal of included studies was undertaken according to study design. Complication rates were statistically analysed for overall and different types of prosthodontic complications.

Results

The search yielded 11,029 results, and 1609 had full-text analysis, resulting in 75 included studies. Most of the studies were assessed to be of moderate quality or risk of bias. The estimated overall prosthodontic complication rate was 0.69%. Abutment screw loosening accounted for 86.7% of all complications noted. Meta-analytics showed no statistically significant differences among connection types for overall or specific prosthodontic complication types.

Conclusions

Within the limitations of the review, the prosthodontic complications reported were very low, and no significant differences were noted between different implant connections. However, the majority of the studies were of observational design and only a few connection types were covered, highlighting the gap in the scientific evidence for clinical decision-making.

Keywords

Implant connections, Prosthodontic Complications

A DEEP LEARNING-BASED MORPHOLOGICAL COMPLETION FRAMEWORK FOR EFFICIENT AND ACCURATE DESIGN OF RESTORATIONS

Du Chen, Zhenyu Wang, Jiefei Shen
State Key Laboratory of Oral Diseases, National Clinical Research Center for Oral Diseases, West China Hospital of Stomatology, West China School of Stomatology, Sichuan University, Chengdu, China

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The quality of morphological restoration of tooth defects is extremely crucial both for occlusal function and aesthetics. However, existing digital software can only provide an approximate shape simulation of the defective teeth using generic tooth templates. The final adjustments on position, size and morphology have to be manually made by dental technicians. This approach is highly dependent on the experience of technicians and extremely inefficient. A lack of reference in design process can also lead to poor morphology of restored teeth, resulting in occlusal, aesthetic issues, or even temporomandibular Joint symptoms. The purpose of this study is to develop a novel approach of tooth template generation using deep learning and implicit shape representation. Moreover, the residual tooth is utilized by the trained network to expedite shape transformation to achieve the desired tooth shape. This newly proposed method is promising in improving both the efficiency and accuracy of the restoration design.

Materials & Methods

100 digital models of complete right maxillary central incisors ($tooth_{11}$) were collected and converted into signed distance field (SDF). The SDF information of all models was included in training set to train an auto-decoder based model. Template for $tooth_{11}$ was obtained, and a neural network (ITC-net) with the ability to intelligently drive template deformation was also trained. 20 $tooth_{11}$ that were not included in training set were cut to simulate three types of defects: corner defects, incisive defects and medium defects in MeshLab. Morphological restoration of defective teeth was performed using ITC-net, while the same defects were manually restored by a experienced technician in EXOCAD. Time required for restoration with both methods was recorded. The morphological completion accuracy was evaluated by three parameters: Chamfer distance (CD), Earth Mover's distance (EMD) and root mean square (RMS) error. The differences of above-mentioned parameters between two methods were compared by paired t-test ($p=0.05$).

Results

Regardless of the form of defect, the time required for morphological recovery with ITC-net was within 3 minutes. In contrast, the time required for manual design increased with the expansion of the defect range, which took a minimum of 20 minutes. In manual completion method, the accuracy of shape completion decreases significantly with the expansion of the defect area. In the ITC-net method, CD, EMD, and RMS were statistically lower than that in manual completion approach.

Conclusions

ITC-net was successfully employed to achieve the completion of tooth morphology with defects. Compared with the manual restoring method in digital design software, the ITC-net showed a morphology much closer to original intact natural teeth. Moreover, this method improved the efficiency of tooth morphology design significantly.

Keywords

computer aided design, tooth morphology, deep learning

EVALUATION OF DENTURE BASE RESINS: SHEAR BOND STRENGTH FOR REPAIR, FLEXURAL STRENGTH, AND COLOR STABILITY

Kyung Chul Oh, Ha Eun Choi
Yonsei University College of Dentistry, Seoul, Republic of Korea

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

This study aimed to assess the shear bond strength of three different types of denture base resins (DBRs) in relation to cold-cure DBRs for denture base repair, as well as their flexural strength and color stability before and after thermocycling.

Materials & Methods

Heat-cure (IvoBase Hybrid), cold-cure (Press LT), and 3D-printable (Denture 3D+) DBRs were used. Twenty-four discs (8×2mm), 24 bars (3.3×10×64mm), and 12 discs (10×2mm) were fabricated per each DBR type for shear bond strength, flexural strength, and color stability tests, respectively. Half of the 8×2mm discs and bars underwent thermocycling, while all 10×2mm discs underwent thermocycling. Shear bond and flexural strength were measured using a universal testing machine, and the results were analyzed using a two-way analysis of variance (ANOVA) test. For the shear bond strength test, cold-cure DBR was attached to three types of DBRs, simulating a denture base repair scenario. For the color stability evaluation, ΔE values were calculated from the $L^*a^*b^*$ values before and after thermocycling within the same specimens using a colorimeter (CR-321), and the results were analyzed using a one-way ANOVA test. Statistical significance was set at $\alpha=0.05$.

Results

The shear bond strength of 3D-printable DBR was significantly lower than that of the heat- and cold-cure DBRs before thermocycling ($p<0.05$), but it showed no significant difference compared to the heat-cure DBR after thermocycling ($p>0.05$). For all three DBR types, the shear bond strength significantly decreased after thermocycling ($p<0.05$). The flexural strength followed the order of 3D-printable, heat-cure, and cold-cure DBRs from highest to lowest, with

statistical significance observed among all groups regardless of thermocycling ($p<0.05$). While thermocycling did not affect the flexural strength of heat- and cold-cure DBRs, the flexural strength of 3D-printable DBR significantly decreased after thermocycling ($p<0.05$). The color exhibited the highest change in the 3D-printable DBR, followed by the heat-cure and cold-cure DBRs, with statistical significance among all groups ($p<0.05$).

Conclusions

Three-dimensionally printable DBRs may possess comparable mechanical properties and repairability to heat-cure DBRs after simulated long-term usage. However, further improvements are necessary to enhance their long-term color stability.

Keywords

additive manufacturing; color stability; denture base repair; denture base resin; flexural strength; shear bond strength; thermocycling

Acknowledgement statement: This research was supported by Basic Science Research Program through the National Research Foundation of Korea funded by the Ministry of Education (No. 2021R1I1A1A01048233).

THE CHALLENGE OF COMPLEX CARE DELIVERY WITHIN A LEARNING ENVIRONMENT

David Chvartszaid
University of Toronto, Toronto, Canada

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

To describe approaches to the provision of complex prosthodontic care by novices in a prosthodontic residency environment.

Materials & Methods

Prosthodontic care is complex, irreversible, multi-disciplinary, risky, expensive and has a significant patient element. Intuitively, such care should be provided by experts. Yet, in a residency environment educators are faced with the challenge of complex care delivery by novices.

Results

This presentation will review 5 approaches to solving this problem: observe first, matching case difficulty and resident ability, building skills before confidence, ensuring appropriate supervision, and focusing on consent and patient psychology.

Conclusions

It is important to acknowledge that to a certain degree errors, complications, and difficulties are inevitable. In fact, they are vital to the resident's growth. Educators' focus should be on prevention, catching issues in a timely manner, and deriving maximum learning benefit when problems occur. Lastly, it is critical to create a calm open learning environment so that residents are open about clinical challenges, not afraid to admit them, and not ashamed to discuss them.

Keywords

Education, complex care delivery, residency, complications learning environment.

A METROLOGICAL PILOT STUDY TO COMPARE DIGITAL AND ANALOGIC ARTICULATORS FOR COMPLETE DENTURES

Leonardo Ciocca[1], Roberto Meneghello[2], Mattia Maltauro[2]
[1]University of Bologna, Bologna, Italy. [2]University of Padua, Padua, Italy

Research Presentation

Topic: Occlusion and Temporomandibular Disorders

Purpose / Aim

The aim of this pilot study is to describe a metrological and digital protocol for comparing the gothic arch tracing of a digital semi-adjustable articulator to that of a semi-adjustable analog articulator when used in the manufacture of a complete denture.

Materials & Methods

Two parallel workflows were established: in the digital workflow, polyvinylsiloxane (PVS) impressions of the edentulous articulated arches were scanned after intermaxillary recording and mounted in the digital articulator. In the analog workflow, plaster models were poured in the same PVS impressions and mounted in the analog articulator using the identical intermaxillary relationship. Subsequently, both articulators underwent protrusive and left/right lateral movements. For each movement, three progressive positions were designated and exported (digital articulator) or 3D scanned (analog articulator) to generate the digital Standard Tessellation Language (STL) file of the articulated models at each position. To allow a comparison between the two articulators, the mandibular model served as the reference system for both workflows. The articulated maxillary model's three progressive positions were tracked by identifying three fiducial points in the upper and lower models, enabling the reconstruction of rigid body lateral and protrusive motion.

Results

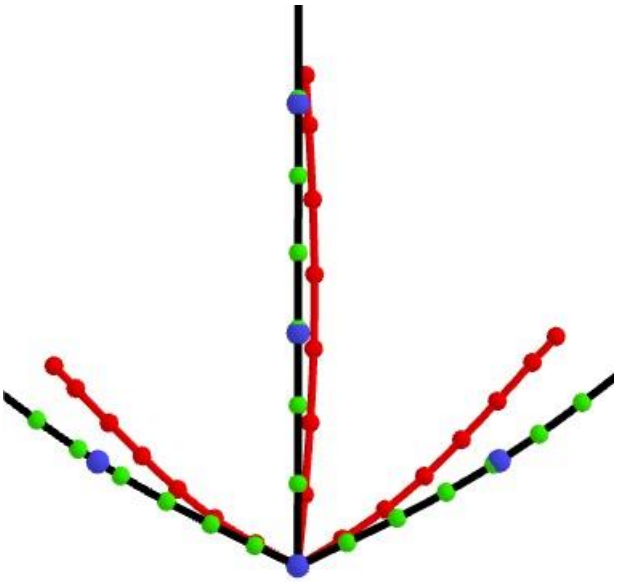
The trajectories for each movement were determined by using interpolating splines to represent the gothic arch pathways. The analog procedure was replicated ten times to conduct

a repeatability test and assess the measurement precision. The repeatability test conducted on the analog articulator revealed a maximum error of 184 mm (the maximum standard deviation) due to the metrological analogical 3D scanning procedure. A comparison between the two articulators demonstrated the presence of differences in the gothic arch pathways, which were detectable and recordable through this metrological protocol (Fig. 1).

Conclusions

The overall methodology has been validated as a reliable metrological approach for comparing various semi-adjustable articulators through gothic arch tracing. However, further studies are required to automate the procedure and investigate the distinctions between semi-adjustable and fully adjustable digital articulators.

Fig. 1 caption:



The comparison of horizontal movements in the mean (after the repeatability test) of the analogic gothic arch (red) and the digital gothic arch (black).

Keywords

Analog articulator, digital articulator, CAD-CAM, metrological measuring, complete denture

EROSIVE TOOTH WEAR COMBINED WITH BRUXISM AND PARAFUNCTIONAL HABITS ; PREVENTION, DIAGNOSIS AND TREATMENT

Mario Dawud[1], Shifra Levartovsky[2]
[1]Tel Aviv uni., Tel Aviv, Israel. [2]Tel Aviv uni., Tel Aviv, Israel

Case Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

Our ultimate goal is to enhance awareness among dental professionals, particularly considering the prevalence of an acid-rich diet in Israel due to its robust agriculture industry, various occupational activities with high risk for erosion, and stressful lifestyle, which can sometimes contribute to bruxism, further exacerbating tooth wear in combination with erosion.

Keywords

Erosive tooth wear (ETW) is a prevalent oral condition frequently observed in Israel and other developed nations worldwide. Despite its gradual progression, it significantly impacts an individual's quality of life. Risk factors for ETW include acids from external and internal sources, sometimes coupled with physical forces such as abfraction, attrition, abrasion, and parafunctional habits.

Early detection plays a crucial role in determining the appropriate treatment. A constant "race" occurs between acids and the protective effects of the pellicle and saliva. It is the responsibility of dental professionals to thoroughly document this condition in clinical records and effectively communicate this information to patients. Fortunately, we now have simple tools like the basic erosive wear exam (BEWE), which enables grading of the condition for each patient and guides dental professionals in managing individual cases.

In our presentation, we aim to discuss the diagnosis, prognosis, and treatment dilemmas by showing various dental cases treated in the Graduate Program in Prosthodontics at the Prosthodontic Department of The Maurice and Gabriela Goldschleger School of Dental Medicine, Sackler Faculty of Medicine, Tel Aviv University, Israel. We will present cases ranging from mild to severe erosive tooth wear, addressing the unique treatment challenges in each case. Additionally, we will introduce diverse treatment modalities, such as monolithic zirconia crowns, inlays, and onlays, while discussing the dis/advantages of each approach. Different adhesion techniques and postoperative instructions for patients will also be covered.

By considering all these factors, we aim to provide guidance to dental professionals on how to effectively manage each case.

CAST REMOVABLE DENTURE PROSTHESES: ESTABLISHING EXPECTATIONS TO IMPROVE OUTCOMES

Neena D'Souza[1,2], Beshr Hajhamid[2], Eszter Somogyi- Ganss[2]
[1]Mississauga Dental Specialists, Mississauga, Canada. [2]University of Toronto, Toronto, Canada

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

The purpose of this university-based population study was to determine the number of appointments and type of adjustments following RPD insertion and their association with patient demographics, type of RPD, and denture survival.

Materials & Methods

This retrospective clinical study examined the records of 257 patients wearing 308 RPDs inserted between 2013 and 2014 with a 5-year follow-up. The outcome measures investigated included postinsertion appointments, major and minor adjustments, and denture survival.

Results

A total of 48.1% of the dentures, were maxillary, and 51.9% mandibular. Most patients (68.9%) had 1 to 3 postinsertion appointments, with 78.6% having no major adjustments. Twenty-six dentures failed (failure rate 8.4%), with the failure-free time estimated at 4.58 years (95%

confidence interval 4.42–4.73 years, Kaplan Meier survival analysis). Failed dentures were significantly associated with more minor adjustments (Mean =4.12, SD=3.90, Kruskal Wallis P=.027; OR=1.18; 95%CI 1.05–1.32, P=.006). More minor adjustments were needed for dentures in the mandible (multivariable Poisson Regression (MPR) P=.003) compared with maxilla. More major adjustments were needed for dentures in the maxilla (MPR P=.030) compared with mandible. More minor and major adjustments were needed for dentures that were remade from within 5 years to beyond 10 (MPR P<.001) and (MPR P<.001) respectively. Patients with musculoskeletal disorders required a significantly higher number of minor adjustments (M=3.67, MPR P<.001) and appointments (M=3.87, MPR P<.001).

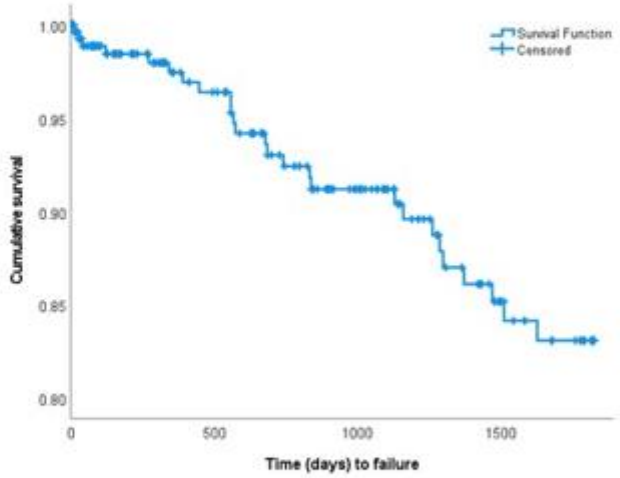
Conclusions

The 5-year survival of RPDs following insertion was estimated at 91.6%. Most patients required 1 to 3 appointments after insertion. Mandibular RPDs were associated with significantly more minor adjustments, and maxillary RPDs with more major adjustments. Both minor and major adjustments were needed for dentures that were remade at any time previously compared with first time denture wearers.

Keywords

removable partial denture prosthesis; cast removable dentures; cast removable partial denture prosthesis; removable partial denture; removable dental prosthesis; cast partial dentures; denture post insertion appointments; denture post insertion adjustments; removable denture survival; removable denture failure.

Figure 1. Cumulative survival of removable partial dentures.



A COMPUTED TOMOGRAPHIC EVALUATION OF MANDIBULAR ADVANCEMENT DEVICE EFFECT AT TWO DIFFERENT HORIZONTAL JAW POSITIONS IN OBSTRUCTIVE SLEEP APNEA PATIENTS

PRANJALI DUTT[1,2], Pooran Chand[2], Balendra Singh[2], Sunit Jurel[2], Neeti Solanki[2], Surya Kant[2]
[1]MRA Medical College, Ambedkarnagar, India. [2]King George's Medical College, Lucknow, India

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

This clinical study's objective was to use computed tomography to assess the impact of Mandibular advancement device at two different horizontal mandibular positions on upper airway dimension.

Materials & Methods

29 willing volunteers who met the inclusion and exclusion criteria were enrolled. An adjustable two-piece MAD was made with a maximum mandibular protrusion of 50%, and after four weeks, it was changed to a maximum protrusion of 70%. After delivering MAD, 4 weeks later, with 50% mandibular protrusion, and again 4 weeks later, with 70% mandibular protrusion, CT scans were taken. Three distinct anatomic levels (retropalatal-RP, retroglossal-RG, and epiglottal-EG) were used to assess the cross-sectional area with diameters (lateral and anteroposterior) of the upper airway. The parametric Student t-test was used to analyse the data.

Results

An intra-group comparison showed that at 4 weeks after MAD with 50% mandibular protrusion compared with baseline and 4 weeks after MAD with 70% mandibular protrusion compared with baseline, there was a statistically significant increase in lateral and anteroposterior dimensions as well as cross sectional area at all three anatomical levels. However, there was no statistically significant difference between the lateral and anteroposterior dimensions with MAD at 70% protrusion compared to MAD at 50% protrusion. It was discovered that the difference in cross-sectional area was statistically significant.

Conclusions

When used to treat oropharyngeal blockage associated with OSA, a mandibular advancement device at 70% mandibular protrusion is more successful than one at 50% protrusion.

Keywords

Obstructive sleep apnea, mandibular advancement device, upper airway, computed tomography

VERTICAL PREPARATION & DIGITAL WORKFLOW, THE REVOLUTION

Sherif Elbarbary
The School of Clinical Dentistry, Sheffield, United Kingdom

Case Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

Historically Full Metal Crowns like gold or even base metals has been the most conservative technique for teeth preparation, but with the advancement in zirconia restorations manufacturing nowadays allowing milling to thin margins 0.5 mm, Vertical preparation has become so popular again specially being conservative technique preserving as much tooth structure and the tissue response around crowns is excellent. Our presentation will cover all the details about vertical preparation revolution including history and innovative trends including digital workflow.

Using this technique of teeth preparation is the trend nowadays and it proves how conservative it can be.

Keywords

Vertical preparation - Knife edge finish line - feather edge finish line - BOPT - verti prep - Shoulderless finish line

PATIENT'S EXPECTATION AND SATISFACTION WITH IMMEDIATELY LOADED ZYGOMATIC-IMPLANT REHABILITATION

Anisha Rodriguez[1], Samer AbiNader[1], Elham Emami[2]
[1]McGill University, Montreal, Canada. [2]Montreal, Montreal, Canada

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To assess patients' expectations and satisfaction with immediately-loaded zygomatic implant-supported fixed rehabilitation.

Materials & Methods

A practice-based study with pre-post design included dental records of 22 consecutive patients (aged > 18 years) who received immediately-loaded zygomatic-implant-supported fixed rehabilitation between 2017 to 2020. Ethics approval for this study was obtained from the Institutional Review Board, McGill University. Inclusion criteria included: 1) Individuals with severely atrophic edentulous maxilla 2) No history of acute sinusitis, systemic illness, or radiotherapy of head and neck. Surgical/prosthetic procedures followed standard protocols and were performed by the same surgeon and prosthodontist. Patients received 2-4 zygomatic implants depending on the available bone in the maxilla, which were immediately loaded with a provisional prosthesis. The final prostheses were delivered at 6 months. Demographic details and patients' expectation data were collected at baseline using a validated instrument (100-mm visual analog scale). Satisfaction data was collected 2 weeks, 1, and 6 months post-intervention. Descriptive statistics and generalized estimating equations were used to analyze data.

Results

Data from 22 patients (10 male and 12 female, mean age 69.7 ± 6.9 years) was obtained. Preliminary results showed high expectations with immediately-loaded zygomatic implant-supported fixed rehabilitation with regard to aesthetics (68%), chewing (59%), speech (64%), and influence on social life (73%). At 6 months, the majority of the patients' expectations were fulfilled with regard to their aesthetics (73%), their chewing abilities (59%), their ability to speak (64%), and their social life (73%). All patients (100%) agreed that they would recommend this treatment to their peers.

There was a statistically significant increase in the level of satisfaction with chewing at 6 months (B=16.99, 95% CI: 0.8, 33.18, p=0.04). All participants agreed that they would recommend this procedure to their peers.

Conclusions

The results of this study suggest that immediately-loaded zygomatic implant-supported fixed rehabilitation meets the expectations and satisfies edentulous patients with atrophic maxilla. The chewing ability of patients is increased within 6 months period. While the results of this study are promising, it is important to confirm them through randomized clinical trials.

Keywords

Practice-based study, zygomatic implant, immediately-loaded, Patient Reported Outcome

---

EVALUATION OF MANDIBULAR ADVANCEMENT DEVICE PLACEMENT BASED ON LEVELS OF TNF-ALPHA IN PARTICIPANTS WITH OBSTRUCTIVE SLEEP APNEA: A CLINICAL STUDY

Sunit Kumar Jurel, Neeti Solanki, Pooran Chand, Balendra Pratap Singh, Nitu Nigam, Surya Kant
King George's Medical University, UP, Lucknow, India

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

The purpose of this clinical study was to compare levels of serum tumor necrosis factor alpha (TNF-alpha), Epworth Sleepiness Scale score, and Berlin Questionnaire score in patients with mild to moderate obstructive sleep apnea before and after treatment with a mandibular advancement device.

Materials & Methods

Twenty participants diagnosed with mild to moderate obstructive sleep apnea based on polysomnography testing were enrolled. A custom nonadjustable mandibular advancement device with 70% mandibular protrusion was provided for each participant for management of the obstructive sleep apnea. Evaluation of TNF-alpha levels was performed before treatment (baseline) and 3 and 6 months after starting mandibular advancement device therapy by using a Human TNF-alpha enzyme-linked immunoassay (ELISA) sandwich kit. The Epworth Sleepiness Scale and Berlin Questionnaire were also filled out by the participants at the same time intervals (a=.05).

Results

A statistically significant decline in the levels of TNF-alpha was observed at 3 and 6 months compared with baseline (P<.001). The Epworth Sleepiness Scale scores showed a statistically significant reduction at 3 and 6 months compared with baseline (P<.001). The risk of obstructive sleep apnea assessed by using the Berlin Questionnaire was found to be significantly reduced at 6 months compared with baseline (P=.001).

Conclusions

Patients with mild to moderate obstructive sleep apnea showed reduced levels of TNF-alpha and Epworth Sleepiness Scale and Berlin Questionnaire scores when treated with a mandibular advancement device.

Keywords: TNF alpha, Obstructive sleep apnea, Mandibular advancement device

Table 4. Comparison of Berlin Questionnaire scores at baseline and at 3 and 6 months

		Berlin Questionnaire Score at Baseline		
		Low	High	Total
Berlin Questionnaire score at 3 mo	Low	4 (80%)	7 (46.7%)	11 (55%)
	High	1 (20%)	8 (53.3%)	9 (45%)
Total		5 (100%)	15 (100%)	20 (100%)
P=.070				

		Berlin Questionnaire Score at Baseline		
		Low	High	Total
Berlin Questionnaire score at 6 mo	Low	5 (100%)	11 (73.3%)	16 (80%)
	High	0 (0%)	4 (26.7%)	4 (20%)
Total		5 (100%)	15 (100%)	20 (100%)
P=.001				

		Berlin Questionnaire Score at 3 months		
		Low	High	Total
Berlin Questionnaire score at 6 mo	Low	11 (100%)	5 (55.6%)	16 (80%)
	High	0 (0%)	4 (44.4%)	4 (20%)
Total		11 (100%)	9 (100%)	20 (100%)
P=.062				

BACK TO THE FUTURE. THE 4D EVOLUTION OF THE ALL-ON-X DIGITAL WORKFLOW

Konstantinos (Dinos) Kountouras
Dental Implants & Aesthetics, Gold Coast, Australia

Case Presentation

Topic: Implant Prosthodontics

Purpose / Aim

Recent digital technological advances have allowed for any All-on-X full arch implant case to be digitally planned.

Adopting a workflow that involves the creation of a virtual patient by combining digital records of intraoral scans, face scans, CBCT and also the digital tracking of the mandibular movements, could ensure not only the optimal planning of the implant positions but also the best fit of the future implant prosthesis.

Nevertheless, only when this advanced digital workflow is combined with some well established traditional prosthetic principles of treatment, long term predictable clinical results could be achieved.

Materials & Methods

Case Description:

A case report of a patient seeking an All-on-X full mouth implant rehabilitation is described. The steps taken to transform the real patient as a complete virtual patient are outlined. Special emphasis is given to the way that traditional full mouth prosthetic rehabilitation principles were incorporated to the digital workflow for predictable functional and aesthetic results to be achieved.

Results

Key points / Clinical Significance:

In this presentation the audience will learn:

- How to incorporate well established traditional prosthetic principles into the digital workflow.

- How to create a virtual avatar of the patient and treatment plan from the smile design stage up to the placement of the implants and delivery of the final prosthesis.

- How to increase their predictability and save chair time as less adjustments would be generally needed.

Conclusions

The use of a virtual patient model using an established and confirmed optimal treatment position will lead to long term successful outcomes in any All-on-X implant case.

Keywords

All-on-X, Dental Implants, Digital workflow, Virtual patient, Full mouth rehabilitation

---

TOOTH LOSS AND SJÖGREN'S: WHAT ARE THE OPTIONS IF IMPLANTS FAIL?

Leslie Laing
University of Toronto, Toronto, Canada

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

While the thought of saliva is unappealing, its functions are vital to a healthy oral environment. Without it, as in the case of the chronic, slowly progressive, poorly understood, multi-system, inflammatory autoimmune disease of Sjögren's, the associated hyposalivation can result in a microbial imbalance resulting in rampant tooth decay, frequent deterioration of dental

restorations, and increased tooth loss. One would not be at fault for thinking that by extracting the decayed teeth and restoring the dentition with implant-supported prostheses, dental decay would be eliminated. Although several studies attest to the high survival rate of implants in Sjögren's, the success rate is far less than favorable. The purpose of this study was to clarify the success rate of dental implant therapy in Sjögren's patients in comparison to those without and to propose viable prosthodontic solutions in the event of implant failure.

Materials & Methods

Sjögren's patients whose dentition had been restored with dental implants and whose prostheses had been in function for at least 2 years were recruited. Age, gender, and implant sites were matched with 3 times as many otherwise healthy control patients. Radiographs of the implant sites were digitized, and peri-implant bone level measurements were made. Success of the implants was based solely on radiographic evidence as per previous criteria (bone loss <0.2 mm annually after the implant's first year of service; Albrektson *et al*., 1986). In cases where implant failure in Sjögren's patients led to the loss of their implant-supported fixed complete denture (IS-FCD), Sjögren's patients were provided with either an implant-supported removable prosthesis (IS-RP) incorporating the remaining implants or, a traditional one if all implants had been lost. Unstimulated and stimulated salivary flow rates were self-reported by patients weekly over a 3-month follow-up period.

Results

While there was a 99.5% success rate of the 425 implants in the 72 non-Sjögren's patients after 2 or more years in function, there was only a 56.9% success rate of the 123 implants in the 24 Sjögren's patients. In those 8 Sjögren's patients where implant loss led to the loss of their IS-FCD, patients were provided with removable options; 5 with support from the remaining implants and 3 without due complete loss of implants. All 8 patients were satisfied with their new removable prostheses and felt that their quality of life had improved as a result. All 8 reported an increase in salivary flow as a result of the conversion from IS-FCD to a removable one whether implant-supported or not.

Conclusions

Sjögren's patients experienced a higher implant failure rate compared to non-Sjogren's patients. Of those Sjögren's patients whose IS-FCD were lost and subsequently restored with removable prostheses whether implant-supported or not, all patients reported a noticeable increase in salivary flow when wearing their new prostheses. These results support the findings that there is an increase in salivary flow rate by allowing stimulation of mechanoreceptors in the oral mucosa under the denture base which a fixed solution cannot provide [Gabay (1980), Jensen *et al.* (1991), Yurdukoru *et al*. (2001), Wolff *et al.* (2004), Matsuda *et al.* (2009), Tango *et al.* (2016)]. The removable option is a viable one for the Sjögren's patient who has experienced the devastating loss of an implant-supported prosthesis with the added potential of saliva stimulation.

Keywords Sjogren's, implant success

PHYSICAL AND BIOLOGICAL FEATURES OF SILVER NANOPARTICLE COATED TITANIUM SURFACE TO HELP THE PREVENTION OF PERIIMPLANT IMFLAMMATION

István Lampé[1], Péter Hajdu[2], Ferenc Tóth[1], Melinda Szalóki[1], Attila Csík[2], Richárd Rácz[2], István Csarnovics[3], Csaba Hegedűs[1]
[1]University of Debrecen, Faculty of Dentistry, Department of Biomaterials and Prosthetic Dentistry, Debrecen, Hungary. [2]Institute for Nuclear Research, Debrecen, Hungary.
[3]University of Debrecen, Faculty of Science and Technology, Institute of Physics, Debrecen, Hungary

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

Using titanium (Ti) dental implants has become a well accepted, popular and science based method for rehabilitating compromised dentition. As number of placed implants increased significantly it has become evident that many cases are affected by periimplant inflammatory processes. The objective of the study was to evaluate the antibacterial effect and physical features of silver nanopraticle (Ag-NP) coated Ti surfaces that may be an additive option of the prevention of such inflammations.

Materials & Methods

Newly developed four stage physical method was used to create safely anchored Ag-Np layer on Grade 2 titanium samples. Antibacterial effect was evaluated by culturing Staphylococcus Aureus on the surface. Scanning electron microscopy was used to investigate the surface configuration of the samples. Surfaces with different particle size were used to evaluate the effect of particle size on the features of the samples. Sessile drop method was used to evaluate the water contact angle on samples with different Ag-NP size. Alamar Blue assay was used to check viability of dental pulp stem cells on the different samples.

Results

Ag-NP-s proved to be safely anchored on the sample surfaces. Culturing tests demonstrated 64.6% antibacterial effect that was significant compared to control glass and native titanium surfaces. The size on NP-s varied between 60 and 368 nm, hydrophilicity varied between 63 to 105 degrees of contact angle. It was also demonstrated that different surface characteristics are related to different level of cell viability. Surface with 60 nm NP-s proved to be the most hydrophilic and viability of cells was comparable to untreated control surface.

Conclusions

Physical and biological features of the surface investigated have an acceptable level to be used to help prevention of periimplant inflammations.

Keywords

silver nanoparticles, antibacterial effect, periimplant inflammation, cell viability

ASSESSMENT OF SWALLOWING AND MASTICATORY PERFORMANCE IN OBTURATOR WEARERS: A CLINICAL STUDY

Niraj Kumar Mishra
King George's Medical University, Lucknow, India

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

The purpose of this study is to determine the prevalence of depressive illness that may be unrecognizedand untreated in the geriatric population and to evaluate their level of satisfaction following prosthodontic rehabilitation.

Materials & Methods

A total number of 94 geriatric patients of age sixty years and above seeking prosthodontic treatment, either edentulous or having number of teeth less than functional dentition were found satisfactory for the study.Geriatric depression scale was administered to them to elicit their psychosocial attitudes and depressive manifestations in their personality. The questionnaire consisted of three parts-

Part A included questions on socio-demographic factors. Modified Kuppuswamy's socioeconomic classification, which includes education level, monthly income, and occupation, was used to classify the socioeconomic status of the patients. Accordingly, 3 groups like illiterate, below standard 12 and graduate or above were created to label the educational status. Employment status was categorized into employed or self-employed, un-employed and pensioner group.

Part B includes questions to determine the psychological attitudes using the Geriatric Depression Scale (Yesavage and Brink, 1982). The GDS Long Form is a brief, 30-item questionnaire in which participants were asked to answer yes or no in reference to how they felt over the past week. Of the 30 items, 20 indicated the presence of depression when answered positively, while the rest indicated depression when answered negatively. Scores of 0-10 are considered normal, 11-20 indicate mild depression and 21-30 indicate severe depression.

Part C-An evaluation of the collected data was then made by comparing the previously defined groups and examining the statistical significance with the help of Chi-square test. The data analyses were carried out using the Statistical Package for Social Sciences (SPSS) version 11.

Results

Demographic distribution of subject according to their age and gender, occupation, income and type of prostheses were assessed and compared.

Assessment of depression level was done using Geriatric Depression Scale (GDS) inventory comprising of 30 items. The scale was administered to the subjects before prosthetic rehabilitation and 1-week and 1-month post-prosthetic rehabilitation intervals.

Significantly higher proportion of females (57.1%) had mild depression as compared to males (30.3%) (p=0.014). No significant association between GDS levels and age was observed, although the proportion of subjects with mild depression was higher in the above 80 years of age group (66.7%) as compared to 60-70 years (37.5%) and 71-80 years (33.3%) group respectively.

A significant inverse association between education and depression was observed. It was observed that among higher GDS levels, the proportion of illiterates (50.0%) and those educated up to standard 12 (48.3%) were significantly higher (p=0.008) as compared to those who were educated up to graduation or higher levels (14.3%).

Majority of subjects were reasonably satisfied (n=54; 57.4%), there were 4 (4.3%) who were not at all satisfied while a total of 30 (31.9%) were not totally satisfied. A total of 6 (6.4%) subjects were totally satisfied.

The satisfaction level of males was significantly higher as compared to that of females (p=0.003). Age wise no significant association with satisfaction level was observed (p=0.338) though the satisfaction levels of those aged above 80 years were higher as compared to younger age groups. No significant association between education and satisfaction levels was observed (p=0.343).

Conclusions

Obturator will improve swallowing ability as well as reduce drinking time in maxillectomy subjects. Masticatory performance was not depending on occlusal force and it is not significantly changed compared to normal, healthy adult having similar occlusal support zone.

Keywords

Masticatory performance; Obturator; Swallowing; Mastication; Occlusal force; Maxillectomy

---

A 3-YEAR FOLLOW-UP STUDY OF ZIRCONIA BARS FOR MANDIBULAR IMPLANT OVERDENTURES

Pedro Molinero-Mourelle[1,2], Marc Emmanuel Grossen[1], Anina Zuercher[3], Manrique Fonseca[1], Martin Schimmel[1,4], Joannis Katsoulis[1]
[1]University of Bern, Bern, Switzerland. [2]Complutense University of Madrid, Madrid, Spain. [3]University of Zurich, Zurich, Switzerland. [4]University of Geneva, Geneva, Switzerland

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

To evaluate the clinical performance of zirconia bars supporting mandibular implant overdentures by means of radiological, biological and prosthodontic outcomes

Materials & Methods

A prospective cohort study on edentulous patients with two interforaminal implants and a mandibular implant overdenture supported by a CAD-CAM zirconia bars was performed based on a clinical follow-up at 1 and 3 years of function. The clinical performance by means of biological outcomes (implant survival and peri-implant conditions), peri-implant bone level changes recorded on a panoramic radiograph and prosthodontic maintenance was assessed.

Results

After 3-year follow-up, 14 patients were included. A 100% of survival with no complications was observed at the implant level. All zirconia bars and the prostheses implants were in success with no prosthodontic maintenance required and no biological complications. Peri-implant radiographic measurements revealed a stable marginal bone level.

Conclusions

The use of zirconia bars for implant overdentures may be a safe and reliable treatment option for the prosthodontic rehabilitation of edentulous mandibles after 3 years of function. A survival rate of 100% was observed for implants, bars and prostheses. Stable peri-implant bone levels with no biological complications nor prosthodontic maintenance requirements.

Keywords

cohort study, edentulism, implant overdentures, prosthodontic maintenance, zirconia

---

THE ROLE OF THE INTERNATIONAL ORGANISATIONS SUCH AS THE ICP IN SHAPING THE WORLD!!!

Matshediso Mothopi-Peri
University of the Witwatersrand, Johannesburg, South Africa. Wits Oral Health Centre, Johannesburg, South Africa

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

International professional organisations such as the International College of Prosthodontists (ICP) play a role in shaping the future of the professions they represent. The ICP says its mission is to promote the speciality and discipline of Prosthodontics which is what its activities are

mostly about. Many professionals and in our case, Prosthodontists join the international organisations for various reasons which include keeping up to date with the advancements in the profession, sharing their knowledge with colleagues, meeting like-minded people and many others.

Materials & Methods

Today the world is changing, and a lot is expected from professionals in addition to their professional skills. Today's professionals need to be socially conscientious and sensitive to the needs of those around them. The expectations from the society are much higher than what they used to be before. What does this mean to the professional organisations that these individuals belong to? Can these expectations also be extended to the organisations?

Results

The presentation will look into this topic with the presenter using her own experiences and expectations as the basis for the presentation. The intention is to highlight the impact that the organisations such as the ICP has made to its members and the areas where improvements can be made. After all it is up to the members to make the required difference and make their organisations to be relevant whilst continuing with the mandate of promoting the speciality and discipline of Prosthodontics.

Conclusions

The international organisations have a much bigger role to play in shaping the future and making the world a better place.

EFFICACY OF A NEW MEMBRANE OBTURATOR PROSTHESIS FOR PATIENTS WITH ACQUIRED SOFT PALATE DEFECTS

Adrien Naveau, Christophe Bou
University of Bordeaux, Bordeaux, France

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

Soft palate defects created during oral cancer surgery may prevent complete palatal closure and trigger palatopharyngeal insufficiency. One current treatment employs a rigid obturator prosthesis; an extension of acrylic resin at the level of the hard palate ensures surface contact with the remaining musculature. Unfortunately, airflow escape often causes hypernasality, compromises speech intelligibility, and creates swallowing problems (including leakage of food and fluid into the nasal airway). We tested a new removable denture featuring a thick dental dam that served as a membrane obturator. The principal objective of the clinical trial was a comparison of speech handicap levels after 1 month in patients with acquired velar insufficiencies who wear either the new device or a conventional, rigid obturator. The

secondary objectives were between-device comparisons of the swallowing handicaps and the health-related qualities of life.

Materials & Methods

The VELOMEMBRANE trial is a superiority, open-labeled, two-way, random crossover clinical trial. Adult patients exhibiting velar or palatovelar substance loss after tumor excision and who were indicated for rigid obturator-mediated prosthetic rehabilitation were to be recruited in two teaching hospitals in France. Fourteen participants were to be included and randomly allocated to wear both prostheses for 1-month periods in either order. The new membrane obturator was a removable resin prosthesis incorporating a rigid extension that holds a dental dam to restore the soft palate. The primary outcome was the extent of phonation-related disability (the overall score on the Voice Handicap Index [VHI]). The secondary outcomes were the Deglutition Handicap Index and healthrelated quality of life scores of the European Organization for Research and Treatment of Cancer (EORTC).

Results

The Covid-19 pandemic stroke and only 4 patients were recruited during the time of the study. The first results showed that some defects could benefit from the new system. However, the traditional rigid obturators were often more satisfying. The main issue with the new membrane obturator was the need for almost-daily membrane change.

Conclusions

This study documented the utility of this new medical device. With future improvement in the membrane biomaterial, this system may greatly improve the management and quality of life of patients with some specific acquired velar insufficiency.

Keywords

Maxillofacial prosthetics, velar insufficiency, removable prosthetics, soft palate defects

---

ASSESSING ACCURACY OF STATIC COMPUTER-AIDED IMPLANT SURGERY IN FULLY DIGITAL WORKFLOW THROUGH NON-RADIOLOGIC TECHNIQUES

Shiu-Fong Ou, Tong-Mei Wang
National Taiwan University Hospital, Taipei, Taiwan

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The objective was to assess the precision of static computer-aided implant surgery within a model-free workflow, eliminating the need for post-surgical radiologic exposure.

Materials & Methods

Partially edentulous patients underwent intraoral scanning (3shape Trios3 system) and CBCT (Morita scanner). Prior to surgery, guided templates were created based on prosthetic and surgical planning by using 3D printing technique (Phrozen sonic 4k printer & Enlighten Materials DD guide resin). Implant drilling and placement were performed with the assistance of these guided templates. To assess the accuracy of the procedure, deviations between the planned and actual implant positions were evaluated using metrology software called Geomagic Control X. The planned implant positions were determined by reversing the guided template, while the actual positions were determined by reversing the scanbody position, which was captured using an intraoral scanner after osseointegration. Deviations were measured in terms of the distance at the implant's entry point and apex, and global angular deviations were also analyzed.

Results

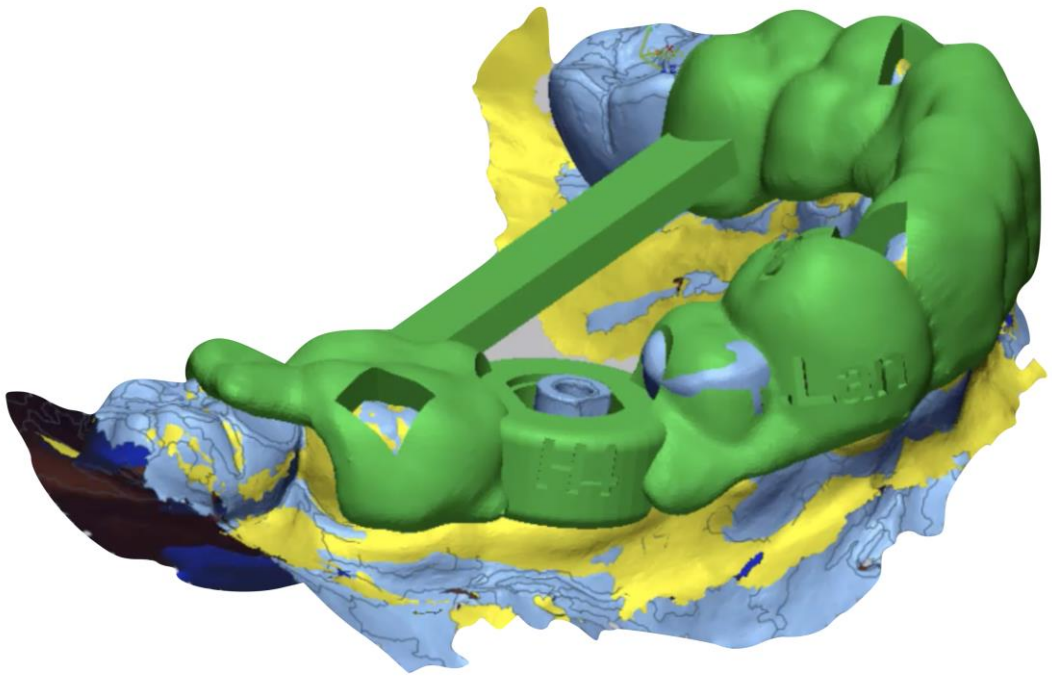
A total of 25 patients were enrolled in the study, undergoing a combined total of 37 implants. The study revealed an average global angular deviation of 3.07° ±1.61°. Additionally, the mean three-dimensional linear deviation at the entry point of the implants was measured at 1.04 ±0.57 mm, while at the apex, it was recorded as 1.28 ±0.62 mm. The implant survival rate remained at a remarkable 100% up to 28 months follow-up period.

Conclusions

The utilization of static computer-aided implant surgery within a fully digital workflow proves to be a viable treatment option. Additionally, employing the scan method to evaluate implant deviation is a feasible approach with the support of open-source metrology software.

Keywords

Guided implant surgery. Digital workflow. Accuracy. Non-radiologic evaluation method.



EFFICACY OF OCCLUSAL SPLINT VERSUS SLEEP HYGIENE AND PROGRESSIVE MUSCLE RELAXATION ON SLEEP BRUXISM

Balendra Pratap Singh[1,2], Ayushi Tandon[3], Ramashanker Ramashanker[3], Kaushal Kishore Agrawal[3], Pooja Mahour[3], Suryakant Suryakant[3], Nishi singh[3]
[1]King George's Medical University UP, lucknow, India. [2]Director, Cochrane India: KGMU Affiliate, Lucknow, India. [3]King George's Medical University UP, Lucknow, India

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

To compare the effect of an Occlusal Splint (OS) and Sleep Hygiene and Progressive Muscle Relaxation (SH & PMR) on stress and sleep bruxism activity in participants with sleep bruxism.

Materials & Methods

58 participants were randomly given either an occlusal splint or instructions for sleep hygiene and progressive muscle relaxation. Stress was assessed by PSS-10 scale and bruxism episodes/hour and bursts/episode were recorded by electromyography of masseter and temporalis using polysomnography. The record for these variables was made at baseline, 1 month, 6 months, and 1 year. The use of unpaired t-test was employed for comparing the continuous variables and chi-square test for categorical variables.

Results

Perceived stress was found to decrease with the OS at 1 month and 6 months compared to baseline and with the SH & PMR at all subsequent follow-up. Their intergroup comparison was however not statistically significant. OS and SH & PMR significantly reduced the bruxism episodes/hour and bursts/episode at all follow-ups ($P<.05$).

Conclusions

The mean PSS scores of the OS group and SH&PMR group decreased at all subsequent follow-up; the changes were however not statistically significant. OS and SH&PMR showed a significant improvement in the bruxism episodes/hr and bursts/episode at all follow-ups, with the occlusal splint being more efficacious comparatively.

Keywords

Humans, occlusal splints, polysomnography, electromyography, follow-Up studies, sleep bruxism, temporal muscle, dyssomnias.

PREVALENCE OF SELF-REPORTED SIGNS AND SYMPTOMS OF TEMPOROMANDIBULAR DISORDERS AMONGST PROFESSIONAL AND STUDENT MUSICIANS: PRELIMINARY RESULTS OF AN ONLINE SURVEY

Suzanne Z'Graggen[1,2], Dominik A. Ettlin[2], Elena Allessandri[1], Martin Schimmel[2,3]
[1]School of Music, Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland. [2]Department of Reconstructive Dentistry and Gerodontology, School of Dental Medicine, University of Bern, Bern, Switzerland. [3]Division of Gerodontology and Removable Prosthodontics, University Clinics of Dental Medicine, University of Geneva, Geneva, Switzerland

Research Presentation

Topic: Occlusion and Temporomandibular Disorders

Purpose / Aim

Assessment of self-reported signs and symptoms of temporomandibular disorders (TMD) experienced by professional and student musicians.

Materials & Methods

The validated questionnaire “TMD screener” consists of 6 self-reported items related to jaw pain, mandibular motion, habits and orofacial function. Using Survey MonkeyTM software, the German version was presented online upon clicking on a link that was distributed via E-Mail and social media to German-speaking musicians in Europe (mainly CH, D, A). Supplementary questions addressed age, gender, daily playtime, instrument type, and type of professional practice.

Results

Between April 12 and May 28 2023 (closing date of June 11, 2023), 531 individuals participated (41,7% male, 57,9% female, 0.4% other, mean age 42.5±15.9 years), of those 27.3% were full- or part-time music students. Overall mean daily time for exercising music was 174±102 minutes. 432 participants completed the “TMD screener”: Symptoms were: TMD pain 25.9%; pain or stiffness after wake-up 23.8%; free of functional impairment 57.3%.

Conclusions

Prevalence figures of TMD symptoms among musicians are inconsistent, warranting clarification. TMD development may either relate to specific techniques that require jaw movements beyond normal function and/or to stress-associated involuntary muscle activity, both potentially resulting in unphysiological masticatory system loading. Preliminary data obtained in this pilot study indicate a need to further explore and differentiate in detail the risk factors contributing to TMD symptom development among musicians at various experience levels.

Keywords

temporomandibular disorders, prevalence, self-reported symptoms, music medicine, online survey

A CLINICAL STUDY TO COMPARE IMPLANT STABILITY , BONE LOSS USING EARLY LOADING PROTOCOL IN TWO IMPLANT SYSTEMS WITH DIFFERENT DESIGN

Ramashanker ., Rani Ranabhatt, Kamleshwar Singh, Shuchi Tripathi, Deeksha Arya
king georges medical university, Lucknow, India

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

The study compared changes in implant stability and bone loss of implants with different designs using early loading at 6 weeks, 3 months, and 6 months

Materials & Methods

Forty subjects were selected and divided randomly by sealed envelope method in Group X and Group A for early loading for missing single posterior tooth in mandible. Implants in Group X had flared crest module and buttress thread design, whereas implants in Group A had parallel crest module and V-shaped thread design. All subjects were evaluated by Ostell for implant stability at the interval of baseline, 6 weeks, 3 months, and 6 months. ImageJ software was used for measurement of crestal bone loss in intraoral periapical radiographs at the interval of 6 weeks, 3 months, and 6 months.

Results

The mean bone loss values of Group X at predetermined interval were 1.51 ± 0.20 mm, 2.11 ± 0.21 mm and 2.13 ± 0.21 mm. The mean bone loss values of Group A were 1.79 ± 0.16 mm, 2.92 ± 0.23 mm and 2.95 ± 0.23 mm. The mean bone loss was statistical significant ($P < 0.05$) at 6 weeks, 3 months and 6 months. It was highly significant in Group A at 6 months ($P < 0.001$).

Conclusions

It was concluded that Group X implants design showed better implant stability and less bone loss when compared to Group A implants design.

Keywords

Aims: The study compared changes in implant stability and bone loss of implants with different designs using early loading at 6 weeks, 3 months, and 6 months.

Setting and Design: In vivo-comparative study.

A RANDOMIZED CONTROL TRIAL FOR EVALUATION OF IMPLANT STABILITY AND LOADING TIME WITH PHOTO-FUNCTIONALIZED DENTAL IMPLANT IN FRESH EXTRACTION SOCKET

MAYANK SINGH, LAKSHYA KUMAR
King George's Medical University, LUCKNOW, India

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

The use of dental implants in oral rehabilitation has currently been increasing since clinical studies with dental implant treatment have revealed successful outcomes. There are definite advantages of doing immediate implant i.e. saving time. The aim was to evaluate role of photo-functionalization on enhanced implant stability or early rehabilitation.

Materials & Methods

The subjects were divided into two groups, in one group implant was placed without any intervention, in the second group , implant was placed with photo-functionalization and use of PRP, the implant stability was checked with RFA, and subsequent bone loss was measured in radiographs in both the groups.

Results

In our study period we have placed implants in 99 subjects, out of which 60 implants placed in maxillary arch and 39 implants were placed in mandibular arch. Average loading time is decided on the basis of implant stability by measuring ISQ value which is 3 months in photofunctionalized treated implants placed in maxilla and 2.5 months in mandible as compared to average loading time in untreated implant which is 6 months.

Conclusions

With this study we have concluded that immediate implant with photo-functionalization had increased the implant stability with due time till the loading and also with the use of regenerative medicine like PRF at the time of placement & after 3 months with minimum invasive surgical techniques, ease of procedure and in shorter time duration.

Keywords

Dental Implants, Photo-functionalization, Immediate implant placement, Extraction socket, PRP

CONTEMPORARY OPTIONS FOR MANAGEMENT OF EDENTULOUS ARCHES

Ting Wang
Indiana University School of Dentistry, Indianapolis, USA
Case Presentation

Topic: Implant Prosthodontics

Purpose / Aim

This presentation will consider pretreatment assessment of patients and treatment with specific reference to anatomic characteristics and relationships, available space and consequently the type of prosthesis indicated. The utilization of dental implants to support both removable and fixed prostheses will be detailed with a focus on recommendations for implant number and position for each implant-based alternative.

Materials & Methods

Contemporary planning and treatment protocols will be discussed. These include pretreatment evaluation of the patient using 3D radiographic tools (CBCT), how to elevate the quality of planning with protocols such as dual scanning, and the importance of using information to identify optimal implant characteristics and position. Detailed analysis of informationcommunication with surgical templates (guided surgical options)will be discussed. Consideration will be given to implant placement and loading protocols, designed to accelerate care without increasing risk and improvement in patient reported outcomes. Finally, contemporary material options will be highlighted in conjunction with fabrication methods (milling and printing) and developing options for the future.

Results

Management of edentulous arches remains important to the specialty of prosthodontics. Treatment options vary dependent on numerous factors. Fundamental factors of significance include the arch being treated, the anatomic characteristics of the arch (ridge and soft tissue form) and the relationship between the arches or available space.

Conclusions

Contemporary treatment options include traditional management with complete dentures, which can in appropriate provide acceptable outcomes for patients. When traditional outcomes are considered less favorable, or when pretreatment assessment suggests dentures will not provide a satisfactory outcome, dental implants can be utilized to improve support, stability and retention for prostheses and so improve patient satisfaction.

Keywords

Complete edentulism, completely edentulous, dental implants, fixed prostheses, removable prostheses, outcomes

Poster Abstract Presentations

Listed by Presenting Author – Alphabetical (Last Name, First Name)

Listed by Presenting Author – Alphabetical (Last Name, First Name)

THURSDAY AUGUST 31 - During Lunch Period

Poster Presenter	Presentation Title
Abe, Toshiyuki	*ACCURACY ON MARGINAL FIT FOR MONOLITHIC ZIRCONIA CROWNS USING TWO TYPES OF SCANNERS AND THREE TYPES OF CAD DESIGN SOFTWARE*
Aldayel, Abdulaziz	*DIGITALLY ASSISTED OBTURATOR AND SPEECH AID DEVICE FABRICATION: A CASE REPORT*
*Almejrad, Lamya	*COMPARISON BETWEEN THE ENAMEL SURFACES DURING MULTI-FACTORIAL EROSIVE TOOTH WEAR*
*Berteretche, Marie-Violaine	*ABOUT A CASE OF SEVERE OLIGODONTIA TREATED WITH REMOVABLE PROSTHESES*
Bicheru, Madalina	*MOLECULAR ANALYSIS OF ORAL MICROBIOTA IN INSTITUTIONALIZED ELDERLY PATIENTS WITH XEROSTOMIA AND MAXILLARY COMPLETE DENTURES*
*Bui Ngoc, Huyen Trang	*IMMEDIATE VERSUS CONVENTIONAL LOADING OF TWO-IMPLANT OVERDENTURE WITH MAGNETIC ATTACHMENTS: A 5-YEAR FOLLOW-UP ON SATISFACTION AND PATIENT-REPORTED OUTCOMES*
*Buurman, Doke	*UNNECESSARY TOOTH LOSS DUE TO EXTRACTIONS PRIOR TO RADIOTHERAPY BASED ON RADIATION FIELD AND DOSE IN PATIENTS WITH HNC*
*Bustani, Mohammad	*A NEW METHOD TO FOLLOW UP EROSIVE TOOTHWEAR OF AN ATTRITIVE ORIGIN: IN-VITRO STUDY*
*Bustani, Mohammad	*DIGITAL DENTISTRY APPLICATIONS IN TOOTHWEAR CASES MANAGEMENT: HOW TO ACHIEVE PREDICTABLE OUTCOME.*
*Chung, Jin Mook	*TREATMENT CONCEPT OF TEMPLATE (VARO GUIDE®) GUIDED IMPLANT PLACEMENT: ACCURACY AND EFFICACY*
*Esparon, Angelle	*CONSERVATIVE MANAGEMENT OF TOOTH SURFACE LOSS IN A SEVERE WEAR CASE*
*Germeni, Savina	*EFFECT OF DIFFERENT RESTORATIVE SYSTEMS AND MATERIALS ON SURVIVAL OF ENDODONTICALLY TREATED ANTERIOR AND POSTERIOR TEETH: A SYSTEMATIC REVIEW*
*Gonda, Tomoya	*PREDICTION OF POSITION OF ABUTMENT TEETH IN DESIGNING REMOVABLE PARTIAL DENTURE*
*Habibzadeh, Sareh	*DETECTION OF VERTICAL ROOT FRACTURES IN ENDODONTICALLY TREATED TEETH; IS CBCT OF GENUINE VALUE?!*
*Hada, Tamaki	*EFFECTS OF PRINTED LAYER THICKNESS AND INFILL RATE ON MECHANICAL PROPERTIES OF SHAPE MEMORY MATERIALS USED IN 4D-PRINTED SPORTS MOUTHGUARD*
Han, Jung Suk	*A NEW APPROACH FOR FABRICATING COMPLETE DENTURES BY USING RAY FACE*
*Hori, Ayaka	*3-MONTH ORAL FUNCTION MANAGEMENT FOR OUTPATIENTS WITH ORAL HYPOFUNCTION*

Hue, Olivier	*IS THE REMOVABLE PARTIAL DENTURE STILL A TOPICAL PROSTHETIC TREATMENT?*
*Imre, Marina	*ANALYSIS OF THE VIABILITY AND MORPHOLOGY OF GINGIVAL FIBROBLASTS ON MATERIALS USED IN PROSTHODONTIC COMPONENTS: IN VITRO STUDY*
*Jain, Veena	*COMPARATIVE EVALUATION OF THE WEAR OF POLISHED OPAQUE, TRANSLUCENT ZIRCONIA CROWNS AND OPPOSING NATURAL ENAMEL– A SPLIT MOUTH STUDY*
Kim, Seong-Kyun	*EFFECTS OF BUILD ORIENTATIONS AND LAYER THICKNESSES ON THE FIT OF IMPLANT SUPPORTED 3D-PRINTING PROSTHESIS*
*Kobayashi, Takafumi	*ADHESION OF CANDIDA ALBICANS TO CAD/CAM DENTURE BASE RESIN WITH THE PRESENCE OF SALIVA*
*Kohei, Maejima	*CONTINGENT VIBRATION FEEDBACK STIMULATION TO INHIBIT SLEEP BRUXISM*

FRIDAY, SEPTEMBER 1 - During Lunch Period

Poster Presenter	**Presentation Title**
*Kwon, YeongSeok	*COMPARISON OF EXCURSIVE JAW MOVEMENTS REPRODUCED BY USING VIRTUAL ARTICULATORS: A PILOT STUDY*
*Lee, Jonghyuk	*REMOVABLE PARTIAL DENTURE TO RESTORE EDENTULOUS AREA DUE TO THE MAXILLECTOMY WHICH WAS RESTORE WITH SOFT-TISSUE GRAFT WITHOUT SUPPORTING BONE.*
*Liu, Yu-Chia	*EFFECTS OF FABRICATION TECHNIQUES AND POSTERIOR PALATAL SEAL ON RETENTION OF DENTURE BASE: AN IN VIVO STUDY*
*Mothopi-Peri, Matshediso	*MY ORGANISATION: WHY DO I BELONG – A PILOT STUDY*
*Nam, Jung Hyun	*AN AXIS DISPLACEMENT OF SINGLE IMPLANT WITHOUT OSSEOINTEGRATION FAILURE AFTER LOADING IN THE MAXILLA: 10-YEAR CASE SERIES*
*Ohta, Midori	*EFFECTS OF ORAL HYPOFUNCTION ON CHEWING DURATION IN OLDER ADULTS*
Pantea, Mihaela	*TRUENESS OF 3D-PRINTED INTERIM FIXED DENTAL PROSTHESES: A COMPARATIVE IN VITRO STUDY*
*Phang, Ziying	*RECURRENT ABUTMENT SCREW LOOSENING AS A SIGN OF IMPLANT FRACTURE: A REPORT OF 2 CASES*
Preoteasa, Elena	*MASTICATION IN PATIENTS WITH DIFFERENT TYPE OF REMOVABLE PROSTHETIC REHABILITATIONS – AN OBJECTIVE EVALUATION*
Preoteasa, Cristina Teodora	*COLOUR REGISTRATION OF NATURAL AND ARTIFICIAL TEETH BY SMARTPHONE IN DIFFERENT LIGHTING CONDITIONS*
*Pruthi, Gunjan	*EFFECT OF SOCKET MORPHOLOGY ON SEATING ACCURACY OF PREFABRICATED PROVISIONAL CROWNS ON IMMEDIATELY PLACED IMPLANTS PLACED IN SIMULATED MODELS*
*Pyae Sone, Khin	*EFFECT OF BUILD ORIENTATIONS ON THE WEAR RESISTANCE AND HARDNESS OF DENTURE TEETH FABRICATED WITH DIGITAL LIGHT PROCESSING*
*Radics, Tünde	*INVESTIGATION OF COMPOSITIONS OF CURRENTLY AVAILABLE DENTAL ZIRCONIA CERAMICS*

*Ryu, Masahiro	*USING INFORMATION AND COMMUNICATION TECHNOLOGY FOR 3D-PRINTED DENTURES: A CASE OF ORAL REHABILITATION OF HOSPITALIZED OLDER ADULTS WITH CARE NEEDS*
*Suta, Márton József	*COMPARATIVE STUDY OF MEASUREMENT METHODS FOR ADDITIVE TECHNOLOGIES*
*Suta, Gábor	*EFFECTS OF DIFFERENT SURFACE CONDITIONING METHODS ON THE REPAIR OF HYBRID CERAMICS*
*Tahara, Hiroko	*EFFECT OF CPC SINGLE AGENT MOUTHWASH ON THE BACTERIAL FLORA IN DENTURE PLAQUES*
*Tan, Mei Na	*ACCEPTANCE OF SILVER DIAMINE FLUORIDE IN COMMUNITY-DWELLING AND INSTITUTIONALIZED ELDERLY*
Tancu, Ana Maria Cristina	*AWARENESS AND ATTITUDES AMONG DENTAL PROFESSIONALS REGARDING THE DIGITAL WORKFLOW FOR COMPLETE DENTURES. A PILOT STUDY*
*Tee, Ai Lin	*AN IN-VITRO STUDY OF THE EFFECT OF TITANIUM SURFACE TREATMENTS ON THE BONDING BETWEEN ZIRCONIA CROWNS AND TITANIUM BASES*
*Thokoane, Meriting	*OCULAR AND ORBITAL DEFECTS: THE WITS EXPERIENCE*
*Yamamoto, Yoshinori	*EFFECT OF BRUSHING ON THE SURFACE ROUGHNESS OF 3D-PRINTED AND MILLED DENTURE BASE RESINS*
*Yook, Donghwi	*COMPARISON OF DEFORMATION BETWEEN MONOLAYER ZIRCONIA AND MULTILAYER ZIRCONIA AFTER SINTERING*
*Zakeri, Majid	*MANAGEMENT OF A FRACTURED IMPLANT-SUPPORTED PROVISIONAL BRIDGE: A CASE REPORT*

**Denotes poster competition entries*

Awards sponsored by the International College of Prosthodontists (ICP)

ACCURACY ON MARGINAL FIT FOR MONOLITHIC ZIRCONIA CROWNS USING TWO TYPES OF SCANNERS AND THREE TYPES OF CAD DESIGN SOFTWARE

Toshiyuki Abe
Aichi-gakuin university, Nagoya, Japan

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The purpose of this in vitro study is to investigate the effect of due to differences in two types of scanners and three types of CAD design software on marginal fit of monolithic zirconia crowns.

Materials & Methods

Monolithic zirconia crowns seated in the metal mold simulating abutment tooth was scanned using scanners of Primescan (Dentsply Sirona) or TRIOS3 (3-Shape).And Crowns were designed using design software of inLab (Dentsply Sirona) or TRIOS Design Studio (3shape) or exocad (exocad).Monolithic zirconia crowns of each two for a total 12 were milled using inLab MC X5 (Dentsply Sirona). The discrepancies on marginal fit of crowns seated in the metal mold were measured with a measuring microscope at ×100. Each crown was measured 3 times.Two-way ANOVA was used to evaluate the differences between scanners and CAD design software (IBM SPSS Statistics Ver.26).

Results

The means and standard deviations of the marginal fit were 45.1 ± 6.0 μm for combination Primescan and inLab, and 78.3 ± 2.9 μm for combination Primescan and TRIOS Design Studio, and 41.8 ± 3.8 μm for combination Primescan and exocad, and 43.5 ± 2.3 μm for combination TRIOS3 and inLab, and 33.4 ± 3.1 μm for combination TRIOS3 and TRIOS Design Studio, and 32.4± 2.1 μm for combination TRIOS3 and exocad. Exocad was the best within design software showed significant differences when analyzing the marginal gaps. Mean marginal gap measurements were better for crowns of TRIOS3 than for crowns of Primescan. The difference in gap of all types at the margin was statistically significant ($P<0.05$).

Conclusions

Accuracy of marginal fit varied depending on the scanners and the CAD design software that uses the data obtained from it. Differences in margin fit were observed due to the types of scanners. And differences in margin fit were observed due to the types of design software. The difference in margin fit was recognized depending on the combination of the scanner and the design software.

DIGITALLY ASSISTED OBTURATOR AND SPEECH AID DEVICE FABRICATION: A CASE REPORT

Abdulaziz Aldayel[1], Hala Abbasi[2], Ghadah Alkhamsi[1]
[1]King Fahad Medical City, Riyadh, Saudi Arabia. [2]King Abdulaziz Medical City, Riyadh, Saudi Arabia

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

By utilizing the evolution of conventional computer-aided design/computer-assisted manufacturing technology we can reduce the amount of discomfort for our patients

Materials & Methods

Intra-oral scanning was performed using (CEREC Omnicam) to have our impression and virtual cast to digitally fabricate the metal framework of the final prosthesis then doing a pick-up impression of the defect to have the (altered master cast) and proceed with the conventional approach in prosthesis fabrication.

Results

The maxillary obturator is a common treatment option for the functional recovery and improvement of the quality of life of patients with maxillary defects.

A removable maxillary obturator prosthesis is a device that separates the oral cavity from the nasal and/or antral cavities and is used to close a congenital or acquired defect in the maxilla. The prosthesis enables the patient to perform the functions of mastication, deglutition, speech and at the same time is comfortable and esthetic.

The conventional method of obturator fabrication requires several impressions to construct the diagnostic, master, and altered casts, which may be uncomfortable for patients with maxillary defects. By utilizing the evolution of conventional computer-aided design/computer-assisted manufacturing technology we can reduce the amount of discomfort for our patients.

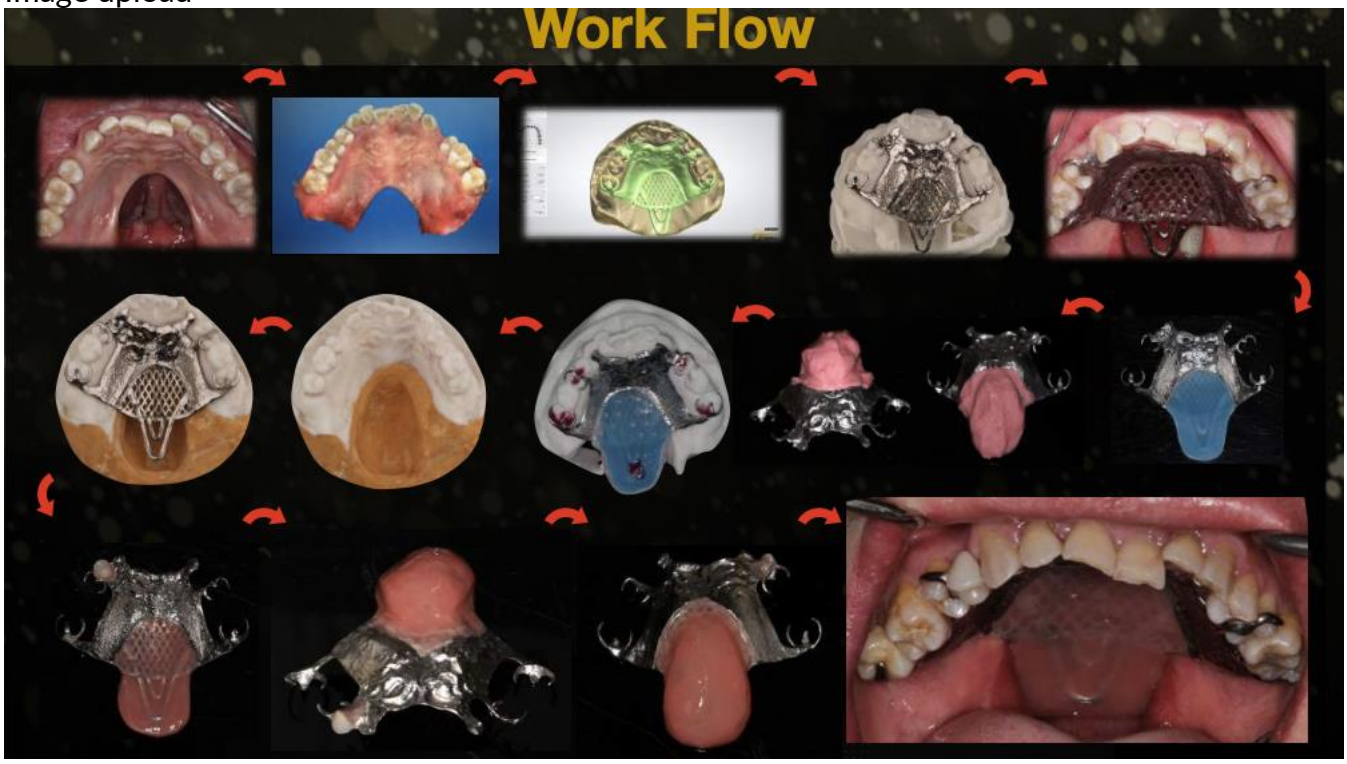
Conclusions

Maxillary obturator was delivered to the patient and a 3-months follow-up visit was scheduled to evaluate the periodontal health and ensure the hygiene compliance to intervene early if the patient fail to maintain a clean and infection free environment.

Keywords

CAD/CAM, Obturator, Digital Dentistry, Speech aid Device,

Image upload



Keywords

Marginal fit zirconia crown scanner design software

COMPARISON BETWEEN THE ENAMEL SURFACES DURING MULTI-FACTORIAL EROSIVE TOOTH WEAR

Lamya Almejrad
King's College London, London, United Kingdom

Research Presentation

Topic: Biology in Prosthodontics

Purpose / Aim

To investigate erosion & attrition enamel wear according to location (buccal vs. occlusal)

Materials & Methods

Sixteen polished human enamel samples (8 occlusal/8 buccal). Three 1.5 mm areas per sample were subjected to erosion, attrition, and erosion/attrition. To simulate erosion, two exposed areas were immersed in 0.3%, pH 3.8 citric acid solution for 5 min, and one erosion area then underwent attrition. Erosion/attrition (and attrition-only) areas were then exposed to 200 cycles of 80 N attrition using ceramic antagonist (ElectroForce 3300 wear simulator). Lesions were measured using profilometry (step height enamel loss), digital microscopy (surface

roughness), and Vickers microhardness at two loads (0.1 N for superficial (<5 µm) subsurface integrity and 0.5 N to assess deeper (>5 µm) enamel).

Results

Attrition-alone resulted in no differences for mean (SD) enamel loss in both buccal (26.3±1.2 µm) vs. occlusal surfaces (26.1±4.5 µm) similarly for Sa roughness. A similar picture resulted from erosion. Erosion/attrition resulted in an intermediate level of enamel damage and no statistical differences between groups. The 0.5 N microhardness testing of the three lesion types resulted in no differences. Whilst the 0.5N hardness testing revealed a similar pattern to profilometry and roughness: attrition resulted in the greatest (64-65%) hardness reduction for both buccal vs.occlusal surfaces, whereas erosion caused the least (6.6%) hardness reduction and erosion/attrition resulting intermediate hardness reduction in both groups. However, the addition of 0.1 N microhardness testing revealed that in the superficial <5 µm enamel, there were statistically increased enamel hardness reductions in the occlusal enamel: (18% for erosion and 41% for erosion/attrition) vs. buccal (7% and 20% respectively) ($P<0.001$).

Conclusions

The enamel sample location did not affect the enamel step height loss or roughness changes.

Keywords

Attrition , Erosion, Buccal, Lingual

ABOUT A CASE OF SEVERE OLIGODONTIA TREATED WITH REMOVABLE PROSTHESES

Andréa CARRIE[1,2], Benjamin-P FOURNIER[1,2], Muriel de LA DURE-MOLLA[1,2], Marie-Violaine BERTERETCHE[1,2]
[1]Paris Cité University, Dental Faculty, Paris, France. [2]Reference Center of Oral Rare Diseases O-Rares, Rothschild Hospital, Public Assistance- Paris Hospitals, Paris, France

Case Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

The management of patients with rare diseases, such as oligodontia, is a challenge for our practice. It confronts us with exceptional clinical situations, with patients presenting a specific oral phenotype and altered dental capital. The aims of treatment are to preserve existing teeth, improve mastication, phonation and aesthetic, and promote the patient's emotional and psychological well-being.

Materials & Methods

The care of these patients is based on multidisciplinary cooperation between the dentist, practitioners in specialized centers, the maxillo-facial surgeon and the geneticist. In a society where appearance is becoming increasingly important, aesthetic considerations are essential. Patients with oligodontia often undergo different phases of treatment, requiring a removable temporization phase.

Results

This case illustrates the rehabilitation of a 25-year-old patient with a complete removable prosthesis. The case will show how to match technical imperatives and aesthetic considerations with the expectation and constraints of the patient.

Keywords

rare diseases; oligodontia; aesthetic; quality of life; removable prostheses

---

MOLECULAR ANALYSIS OF ORAL MICROBIOTA IN INSTITUTIONALIZED ELDERLY PATIENTS WITH XEROSTOMIA AND MAXILLARY COMPLETE DENTURES

Madalina Monica Bicheru[1], Carmen Chifiriuc[2], Andreea Wagner[1], Vladimir Bicheru[1], Cristina Preoteasa[1], Elena Preoteasa[1]
[1]University of Medicine and Pharmacy "Carol Davila", Faculty of Dentistry, Bucharest, Romania. [2]University of Bucharest, Faculty of Biology, Bucharest, Romania

Research Presentation

Topic: Biology in Prosthodontics

Purpose / Aim

The aim of this paper is to identify the characteristics of oral microbiota in institutionalized elderly with maxillary complete denture and xerostomia.

Materials & Methods

This study represents an in-depth, molecular analysis-based study of oral microbiota within a selective sample of 30 geriatric patients from a Romanian care center, divided into two groups: 20 with xerostomia and 10 as a control group. By means of strict methodologies, samples from the palatal mucosa, saliva, and maxillary complete denture were collected, stored at -18°C, and processed for DNA extraction using AllPrep PowerViral DNA/RNA kit (Qiagen). DNA quality and concentration were validated via the NanoDrop spectrophotometer (Thermo Scientific), followed by DNA amplification using organism-specific primers. Nonparametric methods were used for comparative data analysis, with a significance threshold of $p<0.05$.

Results

The molecular analysis of the oral microbiota in institutionalized elderly patients with maxillary dentures indicated notable differences between xerostomia patients and the control ones. Key findings include a significant increase in Bacteroides, Prevotella-Porphyromonas, and Clostridium Leptum, and a greater abundance of Ruminococcus and Enterobacteriaceae in xerostomia patients. No overall differences were found in terms of fungal presence, though Candida sp. was significantly abundant in samples from xerostomia patients, in saliva and maxillary complete denture.

Conclusions

Significant presence of certain bacteria and fungi leading to increased oral infection risks and denture stomatitis has been identified in oral microbiota of institutionalized elderly with xerostomia and complete denture. The results underline the need for an integrated care approach and advanced molecular research in order to enhance preventive and therapeutic strategies for dependent elderly oral health.

Keywords

edentulous, elderly, maxillary complete denture, oral microbiota, molecular analysis, xerostomia, saliva, DNA extraction, integrated care approach

---

IMMEDIATE VERSUS CONVENTIONAL LOADING OF TWO-IMPLANT OVERDENTURE WITH MAGNETIC ATTACHMENTS: A 5-YEAR FOLLOW-UP ON SATISFACTION AND PATIENT-REPORTED OUTCOMES

Ngoc Huyen Trang Bui, Yuriko Komagamine, Sahaprom Namano, Maiko Iwaki, Chun Wei Chang, Anna Miyayasu, Manabu Kanazawa, Shunsuke Minakuchi
Tokyo Medical and Dental University, Tokyo, Japan

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To compare and provide 5-year follow-up data on patient satisfaction and patient-reported outcomes regarding mandibular overdenture assisted by two immediately or conventionally loaded implants with magnetic attachments.

Materials & Methods

Nineteen participants with edentulous mandibles were randomly assigned into either immediate or conventional loading groups. Each participant underwent flapless surgery to insert two implants in the inter-foraminal region. On the same day as implant implantation or three months after surgery, respectively, prostheses in the immediate and conventional groups were loaded utilizing magnetic attachments. All participants completed three questionnaires (oral health-related quality of life [OHRQoL], patient general satisfaction, and patient's denture

assessment [PDA]) at baseline and 1, 2, 3, 4, and 5 years after implant insertion. OHRQoL was evaluated using the Oral Health Impact Profile for Edentulous (OHIP-EDENT-J). The patient's general satisfaction and PDA were assessed using a 100 mm visual analog scale. The Mann-Whitney U test was used to analyze the median differences between the two loading groups at baseline and each yearly score. The Wilcoxon signed-rank test analyzed the within-group data between each yearly score and baseline.

Results

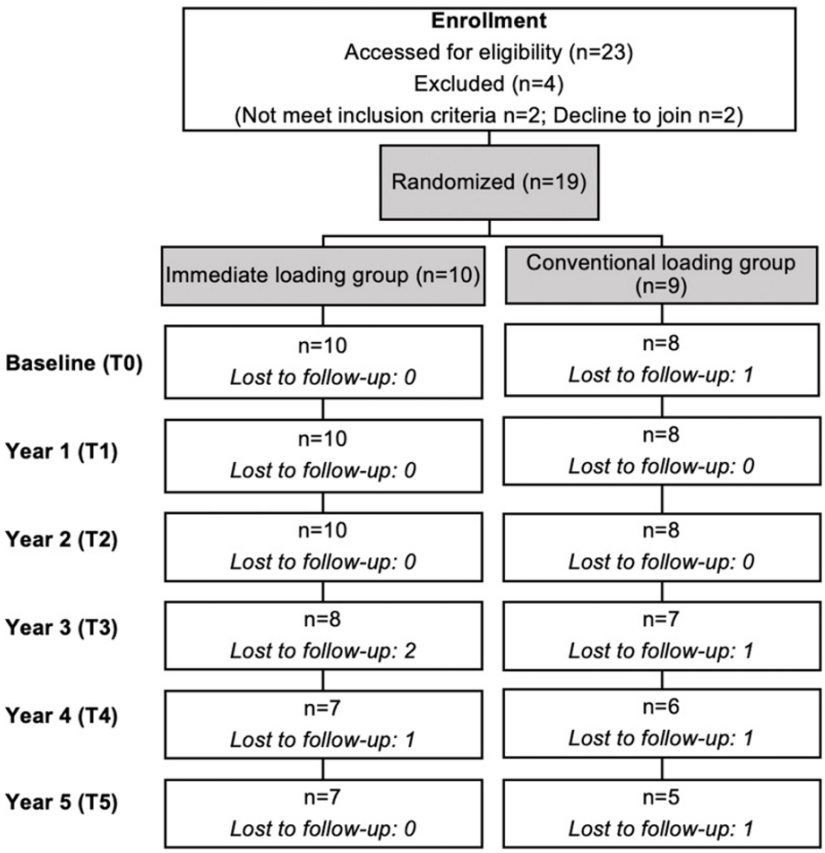
There was no statistically significant difference in OHIP-EDENT-J summary scores, general satisfaction, and the six PDA domains between the immediately and conventionally loaded groups throughout the observation period. Within-group data showed significant differences in OHIP-EDENT-J, patient satisfaction, and all domains of PDA between the baseline and 1 to 5-year follow-up. Mandibular two-implant overdenture with immediate loading using magnetic attachment could be regarded as an acceptable treatment option from a patient's perspective.

Conclusions

Within the limitations of this investigation, there was an improvement in patient-reported outcomes after receiving two-implant overdenture with magnetic attachments, loaded by either immediate or conventional protocols.

Keywords

implant, overdenture, immediate loading, satisfaction



UNNECESSARY TOOTH LOSS DUE TO EXTRACTIONS PRIOR TO RADIOTHERAPY BASED ON RADIATION FIELD AND DOSE IN PATIENTS WITH HNC

Doke Buurman[1], Caroline Speksnijder[2], Marlies Granzier[3], Veronique Timmer[1], Frank Hoebers[3], Peter Kessler[1]
[1]Maastricht UMC+, Maastricht, Netherlands. [2]UMCU, Utrecht, Netherlands. [3]Maastro, Maastricht, Netherlands

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

Prior to radiotherapy (RT), teeth with poor prognosis that pose a risk for post-RT osteoradionecrosis (ORN) are removed. To allow enough time for adequate wound healing prior to RT, decisions are made based on the estimated radiation dose. This study aimed to gain insight into (1) the overall number of teeth extracted and (2) the patient and tumor characteristics associated with the number of redundantly extracted teeth.

Materials & Methods

Patients with head and neck cancer (HNC), treated with RT between 2015 and 2019, were included in this cross-sectional study. For each extracted tooth the radiation dose was calculated retrospectively. The cut-off point for valid extraction was set at ≥40Gy in accordance with the national protocol. Potential factors for doses ≥40Gy were identified, including age, sex, tumor location, tumor (T) and nodal stage (N), overall tumor stage and number of teeth extracted.

Results

A total of 1759 teeth were removed from 358 patients. Of these 1759 teeth, 1274 (74%) appeared to have been removed redundantly, based on the mean dose (Dmean) of <40Gy. Using the maximum dose (Dmax) of <40Gy, 1080 teeth (61%) appeared to have been removed redundantly. Tumor location and N-classification emerged as the most important associative variables in the multivariable regression analysis.

Conclusions

To our knowledge this is the first study to provide insight into the amount of teeth redundantly extracted prior to RT and represents a step forward in de-escalating the damage to the masticatory system prior to RT.

Keywords

Head and neck cancer, radiotherapy, tooth extraction, tooth loss, osteoradionecrosis, dental focal infection, prevention, dental extraction, masticatory system.

A NEW METHOD TO FOLLOW UP EROSIVE TOOTHWEAR OF AN ATTRITIVE ORIGIN: IN-VITRO STUDY

Mohammad Bustani[1,2], Rupert Austin[2]
[1]University of Jordan, Amman, Jordan. [2]King's College London, London, United Kingdom

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

To investigate the accuracy of three different digitizing devices in quantifying the occlusal wear faceting formed by attrition.

Materials & Methods

The accuracy and precision of the test scanners in terms of dimensional and geometric measurement was assessed by scanning objects of known dimension and geometry, with reference to a triangulation laser profilometer. Six natural teeth samples were placed in an attrition stimulator with the buccal cusp positioned against a flat lithium disilicate surface. The samples were scanned with an intraoral scanner at baseline and after every 100 chewing cycles, up until 1000 cycles. Loss of enamel at the worn (buccal) and unworn (palatal) cusps was quantified and correlated with 3D planarity of the buccal cusp facets. Surface topography parameter (Co-flatness) was measuring in the surface metrology software.

Results

The mean trueness of the test scanners, being measured by a 300 µm step, was 22.4µm ($P<0.05$), 19.0µm and 12.6µm for the PlanScan LAB, PlanScan IO and 3M TrueDef respectively. While their precession was 10.5 µm, 21.7 ($P<0.05$) µm and 9 µm respectively versus 1.4 µm for the TL Profilometer.

The trueness of facet measurement was 1.48°, 2.96° and 0.99° for the PlanScan LAB, PlanScan IO and 3M TrueDef respectively. The reproducibility was 0.458°, 0.745° and 0.607° respectively, while it was 0.027° for the TL Profilometer ($P<0.05$).

The buccal cusp showed significant wear of up to 132.4 µm in comparison to the palatal cusp. The planarity of the wear facets consistently approached nearparallelism with the opposing sample as the wear cycles increased and this was strongly correlated ($r= 0.9095$) with increasing enamel loss.

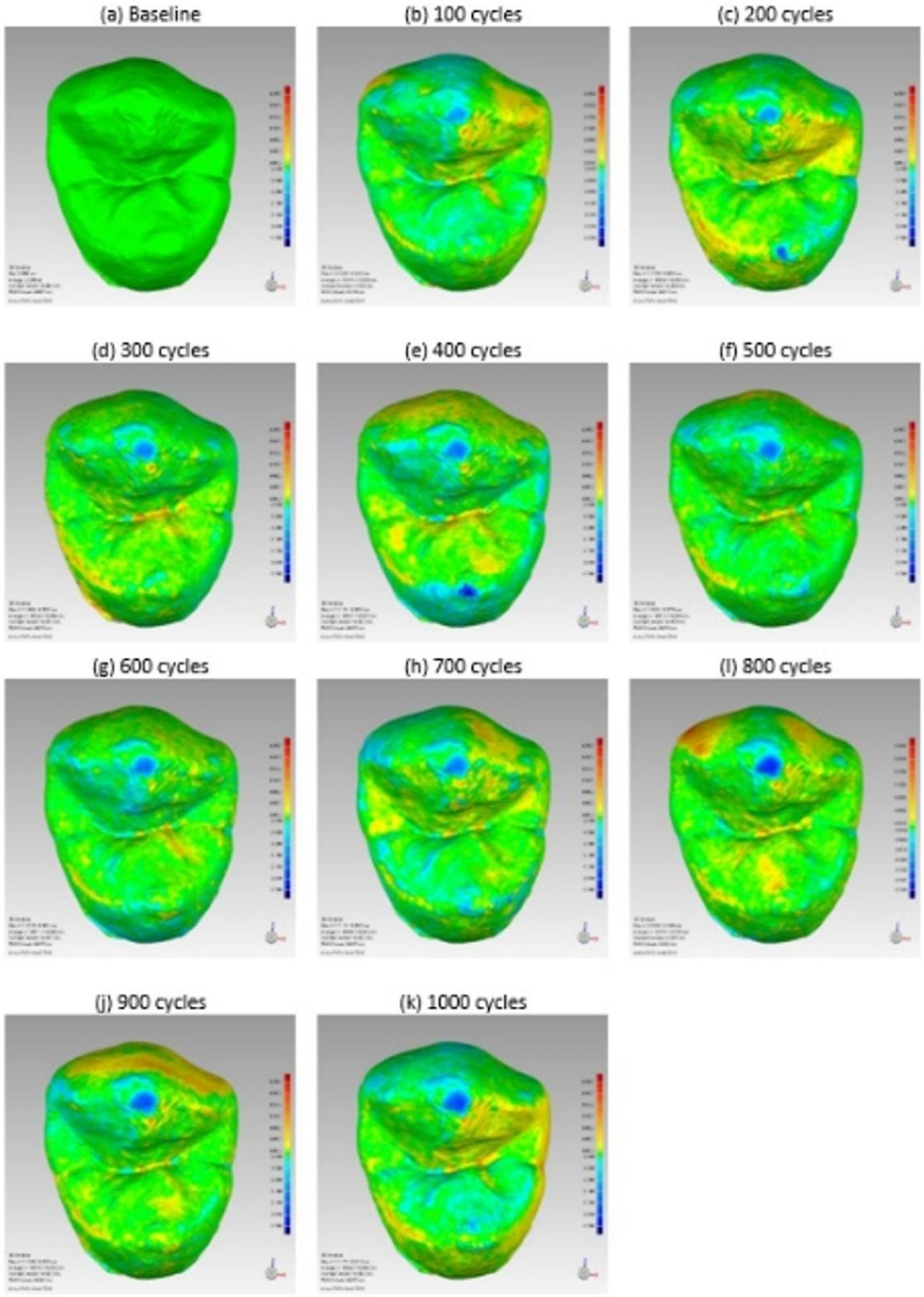
Conclusions

The accuracy and precision results suggested that 3M TrueDef intra oral scanner is as precise as the PlanScan LAB scanner when taking a full scan, while the PlanScan IO was inferior to them. The use of facet planarity and surface topography features is a promising technique to quantify and assess the tooth wear activity due to attrition. Future research including the use of Artificial intelligence is the way forward.

Keywords

Tooth wear, Toothwear, Erosive Toothwear, ETW, Attrition, Digital Dentistry, Artificial intelligence, AI,

Image upload



DIGITAL DENTISTRY APPLICATIONS IN TOOTHWEAR CASES MANAGEMENT: HOW TO ACHIEVE PREDICTABLE OUTCOME

Mohammad Bustani
University of Jordan, Amman, Jordan

Case Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

To highlight the uses of digital dentistry in the management of toothwear cases. Also, to present some tips and tricks in the digital workflow to achieve a predictable outcome.

Materials & Methods

The case will highlight the role of digital dentistry in the examination and assessing the progression of the wear, some of the novel techniques to evaluate the cause the digital dentistry and artificial intelligence (AI).

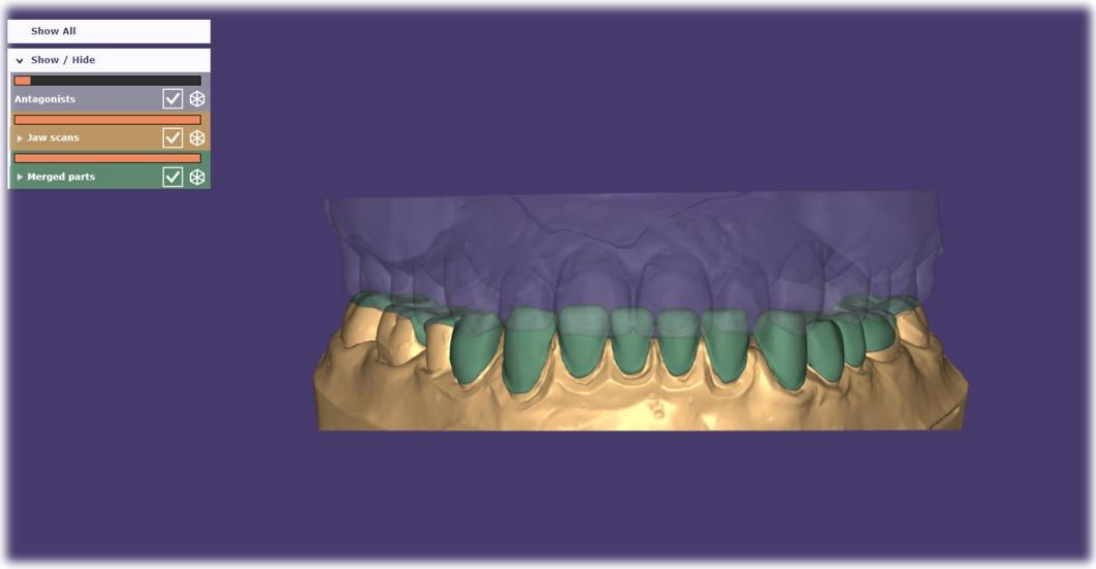
A demonstration of digital dentistry application in the restorative phase; including treatment planning [Digital articulators & digital facebows, Digital smile design, digital wax-up, …] . Finally, the uses of Digital Dentistry in Follow up and maintenance of the cases will be demonstrated.

Conclusions

Digital Dentistry is the way forward, every dentist should be familiar with the digital workflows.

Keywords

Digital Dentistry, Artifical intelligence, AI, Toothwear, Attrition, Toothwear Management



TREATMENT CONCEPT OF TEMPLATE (VARO GUIDE®) GUIDED IMPLANT PLACEMENT: ACCURACY AND EFFICACY

JIN MOOK CHUNG, Won Hur, Seoung-Jin Hong, Janghyun Paek, Kwantae Noh, Hyeong-Seob Kim, Kung-Rock Kwon, Ahran Pae
Department of Prosthodontics, Kyung Hee University College of Dentistry, Kyung Hee University Medical Center, Seoul, Republic of Korea

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

This study aims to evaluate the accuracy and efficacy of implant placement using Varo Guide® (Neobiotech, Seoul, Korea) in clinical settings, where a dental implant fixture is placed using a template guide, Varo Guide®, and its position is compared to a pre-operational planned position.

Materials & Methods

Neobiotech CMI IS-III activee® with diameter 4.5 ㎜, length 10 ㎜(Neobiotech, Seoul, Korea) implant fixture was placed on 10 dentiform(LHW-1, M.Tech Korea, Guri, Korea). Varo Guide® production and CBCT radiographic imaging are performed. Deviation between the planned and placed implant fixture placement was analyzed using the Varo Plan software. Deviation due to the implant fixture measurement sites (coronal point, apical point) before and after the placement based on the template guide hole axis was analyzed using the Geomagic® Control XTM software.

Results

The displacements of the implant fixture measured with Varo Guide® were 0.34 ± 0.15 mm at GC(Global deviation at Coronal point), 0.52 ± 0.22 mm at GA(Global deviation at Apical point), and 0.42 ± 0.15 mm at D(Depth displacement). The angle between the planned and placed implant axes was 1.13 ± 0.64°. The average distance difference between the shoulder part in the mesial-distal section was 0.27mm, and the apex part was 0.34mm. In the Palatal-Labial(Buccal-Lingual) section, the average distance difference of the shoulder part was 0.48mm and the apex part was 0.64mm. There was no statistically significant difference in the error according to the placement position between the groups in the error analysis between the planned implant and the placed implant($P>0.05$), and there were statistically significant differences in coronal and apical deviation($P<0.05$).

Conclusions

In implant placement using the template guide (Varo Guide®), a deviation between the planned and placed implant fixture has been identified but is evaluated within the clinically acceptable range. If the operator has sufficient knowledge about the template guide and minimizes the errors during implant placement, it will be able to contribute to optimal efficiency and patient safety.

Keywords

Template guide, Surgical guide, Guided surgery, Dental implant surgery, Varo Guide®, Neobiotech

Table 2 Statistical analysis results on measurement position (coronal point, apical point) deviation from two cross-sections (MD section, BL section) depending on the implant position centered on the axis of the Varo Guide® hole

		N	Planned			Placed			diff (=Planned-Placed)			P-value*
			Mean	95% CI		Mean	95% CI		Mean	95% CI		
Total		120	0.33	0.27	0.39	0.53	0.45	0.61	-0.20	-0.26	-0.14	<.0001[a]
Implant position	#11	40	0.51	0.37	0.64	0.70	0.51	0.88	-0.19	-0.29	-0.09	0.0050[b]
	#45	40	0.25	0.18	0.33	0.51	0.40	0.61	-0.26	-0.35	-0.16	<.0001[b]
	#46	40	0.22	0.15	0.29	0.37	0.27	0.48	-0.15	-0.26	-0.05	0.0042[b]
Measurement position	Coronal	60	0.28	0.20	0.35	0.46	0.36	0.56	-0.18	-0.25	-0.11	0.0015[c]
	Apical	60	0.37	0.28	0.47	0.59	0.47	0.72	-0.22	-0.31	-0.13	0.0011[c]
Section	MD	60	0.25	0.19	0.31	0.36	0.30	0.43	-0.11	-0.17	-0.05	0.0018[d]
	BL	60	0.40	0.30	0.50	0.69	0.55	0.82	-0.29	-0.38	-0.19	<.0001[d]

CONSERVATIVE MANAGEMENT OF TOOTH SURFACE LOSS IN A SEVERE WEAR CASE

Angelle Esparon
Queen Mary University Of london, London, United Kingdom

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

To conservatively manage a severe tooth surface loss with adhesive restoration and removable prosthesis in a bruxist.

Materials & Methods

A partially edentulous 66-year-old male with generalised moderate to severe tooth surface loss (TSL) was referred by his GDP due to continuously failed restoration despite several restorative interventions. The patient complained about dentinal hypersensitivity, loose teeth, and speech issues. His main risk factors for TSL were intrinsic, extrinsic acid, side effects of polypharmacy (dry mouth) and attrition.

The patient had an increased risk of failure of the anterior composites due to bruxism and a lack of posterior occlusal support (Milosevic and Burnside, 2015). Therefore, the upper posterior teeth were replaced by a denture to increase the number of occlusal units.

An acrylic provisional denture was given as an immediate measure after the extraction of UR2, and UL4. He was later issued with a simple, hygienic cobalt-chrome upper removable partial denture.

Results

There was a good outcome, a behavioural change and a good adhesive restorative outcome.

Conclusions

Patients with severe wear can be successfully managed with conservative treatment and composite is a viable treatment option even in severe TSL, but the patient's engagement with treatment was vital.

Keywords

Tooth surface loss, Tooth wear, Adhesion, Cobal-chrome denture, Attrition, Erosion

I

EFFECT OF DIFFERENT RESTORATIVE SYSTEMS AND MATERIALS ON SURVIVAL OF ENDODONTICALLY TREATED ANTERIOR AND POSTERIOR TEETH: A SYSTEMATIC REVIEW

Andreas Nianios[1], Alexandros Tournavitis[1], Panagiotis Pandoleon[1], Savina Germeni[1], Theodora Slini[2], Petros Koidis[1], Dimitrios Tortopidis[1]
[1]School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece. [2]Aristotle University of Thessaloniki, Thessaloniki, Greece

Research Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

Different types of posts, various core materials and designs have been reported for the restoration of endodontically treated teeth (ETT). The aim of this systematic review was to investigate the effect of different restorative systems and materials on survival rates of anterior and posterior ETT.

Materials & Methods

An electronic systematic search was conducted in the MEDLINE (Pubmed) database to identify the randomized clinical trials (RCTs), the prospective and retrospective studies published between 2001 and 2022. Including studies were selected based on inclusion and exclusion criteria. The following search keywords were selected: restoration of endodontically treated teeth, post and core, anterior and posterior ETT, direct restoration, indirect restorations, metal posts, nonmetallic posts, cast and/or prefabricated posts, composite resin, amalgam, dental crown, survival rate. Data were analyzed with non-parametric tests and the level of significance was set at $p<0.05$.

Results

Thirty-six clinical studies (22 RCTs, 4 prospective and 10 retrospective) met the inclusion criteria. The results of this study on the survival of anterior ETT suggested no difference between the different types (metal and nonmetallic) of posts ($p=0.361$). Additionally, no difference was revealed between the direct (composite resin) and indirect (metal-ceramic crowns) restorations ($p=0.327$). On the contrary, significant differences in the survival rates were detected between the restorations of posterior ETT with and without posts ($p=0.034$). Furthermore, there was a significant difference in the survival rates of posterior ETT between the restorations with crowns and amalgam ($p=0.049$). It was, also, found that the ETT restored with posts and crowns had superior outcome then the ETT without posts and crowns ($p=0.01$).

Conclusions

Both direct and indirect restorative systems can be used for the restoration of anterior ETT. However, the findings of the present study show superior survival rates for posterior ETT restored with posts and crowns in comparison to direct restorations without posts.

Keywords

restoration of endodontically treated teeth, post and core, metal posts, nonmetallic posts, composite resin, amalgam, crown, survival rate.

PREDICTION OF POSITION OF ABUTMENT TEETH IN DESIGNING REMOVABLE PARTIAL DENTURE

Tomoya Gonda[1], Toshihito Takahashi[1], Tomoaki Mameno[1], Kazunori Nozaki[2], Kazunori Ikebe[1]
[1]Department of Removable Prosthodontics and Gerodontology, Osaka University Graduate School of Dentistry, Suita, Japan. [2]Division of Medical Information, Osaka University Dental Hospital, Suita, Japan

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

We have developed a system that can automatically design an optimal partial denture by providing patient information and have achieved recognition of the missing part and the remaining teeth. In this study, we aimed to develop a system that automatically selects the abutment tooth as the first step in partial denture design.

Materials & Methods

Using the design data of 486 removable partial dentures designed and delivered by specialists of the Japan Prosthodontic Society at the Department of Removable Prosthodontics and Gerodontology, Osaka University Dental Hospital between 2003 and 2022, a model to predict the abutment teeth of removable partial dentures from the missing tooth sites (hereinafter referred to as the prediction model) was developed using deep learning. This study was approved by the Ethics Committee of the Osaka University Graduate School of Dentistry (H30-E26). The above data were randomly classified into two datasets (340 dentures for training and 146 dentures for testing). Python 3 and Keras libraries were used to implement the prediction models, and TensorFlow was used as the backend. The prediction models were evaluated by comparing the predicted abutment teeth of the dentures using the prediction models with the actual abutment teeth of the dentures on the test data.

Results

Hyperparameter tuning resulted in a prediction model with three intermediate layers, a learning rate of 0.01, a batch size of 32, and 300 training cycles. The results of training under the above conditions showed that accuracy, loss, validation_accuracy, and validation_loss were 0.97, 0.07, 0.94, and 0.18, respectively. The abutment tooth sites of the dentures predicted by the above prediction model matched 71.2% of the dentures. We plan to increase the number of data and create prediction models for the upper and lower jaws separately, as well as models that predict not only the position of the abutment tooth but also the type of retainer.

Conclusions

In conclusion, we demonstrated the possibility of using deep learning to predict the location of abutment teeth.

Keywords

removable partial denture, abutment teeth, artificial intelligence, design

---

DETECTION OF VERTICAL ROOT FRACTURES IN ENDODONTICALLY TREATED TEETH; IS CBCT OF GENUINE VALUE?!

Sareh Habibzadeh
Associate Professor, Department of Prosthodontics, School of Dentistry, International Campus, Tehran University of Medical Sciences, Tehran, Iran., Tehran, Iran, Islamic Republic

Research Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

Vertical root fractures (VRFs) sometimes occur in endodontically treated teeth. They have a difficult diagnosis and a dismal result. The objective of this review was to evaluate the diagnostic performance of cone-beam computed tomography (CBCT) for detecting VRFs in teeth that had undergone endodontic treatment.

Materials & Methods

Literature was reviewed from Web of Science, PubMed, Cochrane Review, SCOPUS, and Embase data- bases between 2000 and 2022. The searched keywords included "endodontically treated teeth," "cone-beam com- puted tomography," "CBCT," "tooth fracture," "vertical root fracture," "VRF," "accuracy," "sensitivity," and "specificity." Only articles in the English language were included. The final analysis included 20 papers that satisfied the eligibility requirements.

Results

The overall mean ± SD values (%) for the diagnostic sensitivity and specificity of CBCT for detection of VRFs in endodontically treated teeth in the presence of root-filling materials without an intracanal post were 71.50 ± 22.19 and 75.64 ± 19.41, respectively. The overall mean (SD) value (%) for the sensitivity of CBCT for the detection of VRFs in the presence of root-filling materials and intracanal posts was 72.76 (18.73), while the mean (SD) specificity was 75.44 (18.26). The accuracy of CBCT (mean ± SD) was 78.47 ± 17.19% and 74.02 ± 10.64%, respectively, for teeth without intracanal posts and those with posts.

Conclusions

Further clinical research is needed to validate the optimum efficiency of CBCT as a diagnostic tech- nique for detecting VRFs in teeth that have had endodontic treatment, given the low sensitivity, significant heteroge- neity of studies, and lack of in-vivo studies on the subject.

Keywords

Endodontically treated teeth, Cone-beam computed tomography, Tooth fracture, Sensitivity and specificity

---

EFFECTS OF PRINTED LAYER THICKNESS AND INFILL RATE ON MECHANICAL PROPERTIES OF SHAPE MEMORY MATERIALS USED IN 4D-PRINTED SPORTS MOUTHGUARD

Tamaki Hada, Manabu Kanazawa, Maiko Iwaki, Shunsuke Minakuchi
Tokyo Medical and Dental University, Tokyo, Japan

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The purpose of this study was to evaluate the effects of printed layer thickness and infill rate on the mechanical properties of shape memory materials used in 4D-printed sports mouthguards.

Materials & Methods

The test specimens were designed using 3D CAD software (Fusion360, Autodesk) and output in the STL file format. The filament material was a thermoplastic shape-memory polyurethane elastomer (TPU) (SMP55, Kyoraku), and the specimens were printed using a fused deposition modeling (FDM) 3D printer (Mydo200, NCI). Printed layer thickness (0.2 mm and 0.4 mm) and fill rate (50 % and 80 %) were classified into four groups. For each group, dynamic viscoelasticity tests (DMA) were performed to confirm shape memory properties using the glass transition temperature (Tg) (n=1), and mechanical property tests (flexural, tensile, and Charpy impact tests) were performed (n=5). The average flexural strength (FS), flexural modulus (FM), tensile strength (TS), and tensile modulus (TM) values were analyzed using one-way analysis of variance (ANOVA). Tukey's multiple comparison test was then performed ($p<0.05$). Kruskal-Walllis and Steel-Dwass multiple comparisons were performed for the mean values of Charpy impact strength ($p<0.05$).

Results

The Tg of TPU was approximately 55°C for all groups. Therefore, TPU could be proposed as a 4D-printed material that induces shape memory effect (SME) by applying temperature stimulus at temperatures above 55℃. The 0.2 mm-80 % conditions provided the highest FS, TS, and TM, while the 0.4 mm-50 % conditions provided the highest Charpy impact value ($p < 0.05$). The FS,

FM, TS, and TM results suggested that the infill rate, and not the printed layer thickness, may affect mechanical properties. However, the Charpy impact value of 0.4 mm was significantly higher than that of 0.2 mm, despite the differences in infill rate. This was considered to be due to the high absorption energy of impact per printed layer, which prevents the dispersion of internal stress between layers.

Conclusions

Under limited conditions, the layer thickness and infill rate of the shape memory materials in the 4D-printed sports mouthguard showed the highest FS, TS, and TM values at 0.2 mm-80% and the highest Charpy impact value at 0.4mm-50% condition.

Keywords

4D-printed, Shape memory material, Fused deposition modeling, Layer thickness, Infill rate

---

A NEW APPROACH FOR FABRICATING COMPLETE DENTURES BY USING RAY FACE

Jung Suk Han, Jun-Ho Cho
Department of Prosthodontics, School of Dentistry, Seoul National University, Seoul, Korea

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

The fabrication of immediate and final complete denture has been a challenge to patients and clinicians. Recently introduced face scanner (Ray Co., Ltd., Seoul, Korea) can detect imaginary lines such as midline of the face, FH-plane and Camper's line etc. by simple photo taking. This presentation will introduce clinical procedures how to use this reference lines and points for edentulous patients.

Materials & Methods

At first appointment, scanning patient's face without anything in the mouth. Specially designed stock tray can be used to take final impression of the residual ridge (fig 1). We can mold upper anterior lip support during impression procedure. Then this tray can be used as a stable baseplate to determine occlusal vertical dimension and record centric bite with the help of posterior rim and anterior landmarks. Finally, draw the horizontal line and vertical midline at anterior part of the tray. One more face scan with final impression in the patient mouth before patient leave the clinic. Send final impression and facial scan data to the dental laboratory.

At second appointment, full try in of the wax denture and check lip support, midline, VD and occlusion. Take face scan of wax denture again and check everything is fine.

At third visit of the patient, deliver the final upper and lower denture.

Results

Face scanner can be a useful tool for fabricating complete dentures with easy and accurate.

Conclusions

The advantages of this method are 1) less visit time and number 2) confirm reference points and lines with software easily 3) achieve high precision tooth relationship without complicated procedure in the clinic and laboratory.

3-MONTH ORAL FUNCTION MANAGEMENT FOR OUTPATIENTS WITH ORAL HYPOFUNCTION

Ayaka Hori, Yasuhiro Horibe, Midori Ohta, Masahiro Ryu, Takayuki Ueda
Tokyo Dental College, Tokyo, Japan

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

According to the 2016 definition of the Japanese Society of Gerodontology, oral hypofunction (OHF) is a disease diagnosed by seven oral-related factors, including oral hygiene, oral dryness, occlusal force, tongue–lip motor function, tongue pressure, masticatory function, and swallowing function. Poor nutrition is a result of declining oral function, which eventually affects general health. The aim of this study was to investigate the effects of 3 months of oral

function management on oral function and nutritional status in outpatients aged 65 yr or older with OHF.

Materials & Methods

Sixty-two patients aged 65 yr or older with OHF participated and were randomly divided into two groups: oral function-managed (OF) and control group (CO). The OF group performed daily training to address the declining function for 3 months. A meal balance guide was also used to provide nutritional advice. The CO group performed tooth brushing and denture cleaning without functional training. Oral function and nutritional status were assessed every 1.5 months using the Mini Nutritional Assessment (MNA). The number of declined functions and nutritional status at 0–3 months were compared. Furthermore, the OHF recovery rate was calculated. This study was approved by the Ethics Committee of Tokyo Dental College (#1094) and supported by JSPS KAKENHI Grant Number JP21K17073.

Results

The number of declined functions was 4.0 ± 0.9 and 4.0 ± 1.0 at 0 months and 3.0 ± 1.4 and 3.0 ± 1.4 after 3 months, in the OF and CO group, respectively. In the OF group, the MNA score increased from 25.0 ± 3.2–27.0 ± 3.1 after 3 months, with a significant difference, whereas in the CO group, it increased from 26.5 ± 2.3–27.0 ± 2.6, without a significant difference. In the OF group, 12 of 31 patients recovered from OHF, with a recovery rate of 38.7%, whereas in the CO group, 9 of 31 patients recovered, with a recovery rate of 29%.

Conclusions

Oral function management of patients with oral hypofunction reduced the number of declined functions and improved the MNA score. Therefore, oral function management, including nutritional advice, can improve oral function and nutritional status.

Keywords

Gerodontology, Oral function, Oral hypofunction, Older adults.

IS THE REMOVABLE PARTIAL DENTURE STILL A TOPICAL PROSTHETIC TREATMENT?

Olivier HUE[1,2], Catherine CHAUSSAIN[3,4]
[1]Aix-Marseille université - ecole de medecine dentaire, MARSEILLE, France. [2]UMR 7268 ADES, CNRS, EFS, Aix-Marseille University,, MARSEILLE, France. [3]Université Paris Cité Lab URP2496 Orofacial Pathologies, Imaging and Biotherapies. Dental School ITE, PÄRIS, France. [4]Université Paris Cité Lab URP2496 Orofacial Pathologies, Imaging and Biotherapies. Dental School APHP Hôpital Bretonneau- CRMR métabolisme du Phosphore et du calcium (OSCAR, ERN BOND) -FHU DDS-net, PARIS, France

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

In today's partially edentulous world, implantology is the recommended treatment. If bone volume is insufficient, grafting techniques, bone filling, the use of short implants or even zygomatic implants seem to be able to resolve all anatomical difficulties. Problems associated with excess bone are less frequently addressed, since resorption usually eliminates such excess.

However, certain genetic diseases, such as hereditary hypophosphatemic osteomalacia linked to the X chromosome (XLH), can cause severe multiple exostosis involving the maxilla and mandible on the buccal and lingual sides, as well as local problems such as amelar fragility, periodontal problems and general problems such as entesopathy, rickets, pain and difficulty in moving around.

Materials & Methods

In this clinical case, the usual therapeutic solutions were abandoned for the following reasons:

In the maxilla: the implant solution is very delicate, as the prosthetic space is very small < 5mm - the contribution of bone surgery raises the question of what the bone response to hypophosphatemia will be

In the mandible:

Fixed solution: the prosthetic space is less than 4mm, and the possibility of bonding with enamel is uncertain and weaker.

Removable prosthesis: absence of vestibular and lingual walls

Results

The chosen final solution was in the maxilla, a conventional removable partial denture was the most appropriate therapeutic rapproach, with an anterior guidance designed to accommodate the overbite, and in the mandible, a therapeutic abstention.

Conclusions

The patient's desire for a simple, rapid and minimally invasive restoration was met, as she was severely handicapped by her disease and had to use a wheelchair.

Keywords

removable partial denture - Ricketts -hypophosphatemic osteomalacia - exostosis -

ANALYSIS OF THE VIABILITY AND MORPHOLOGY OF GINGIVAL FIBROBLASTS ON MATERIALS USED IN PROSTHODONTIC COMPONENTS: IN VITRO STUDY

Marina Imre, Mihaela Pantea, Andreea Didilescu, Veaceslav Saramet, Ana Maria Tancu
Faculty of Dental Medicine, UMFCD, Bucharest, Romania

Research Presentation

Topic: Biology in Prosthodontics

Purpose / Aim

The aim of this study was to analyze a CAD-CAM PMMA material used for occlusal splints compared to an acrylic resin material obtained by 3D printing technique, in terms of surface cytotoxicity, cellular changes and autophagy levels.

Materials & Methods

We produced material samples from PMMA and 3D printed acrylic resin with the dimensions of 13 mm diameter and 4mm height. The biocompatibility of the 2 materials samples was assessed after 2 or 24 h of incubation in the presence of human gingival fibroblasts (HGF-1 cell line). The MTT and LDH tests were performed. The autophagy markers, LC3-B and Beclin-1 were analyzed using ELISA kits and a semiautomatic ELISA analyzer – Biosystems, Spain.

Results

After 2 hours of incubation the results showed that the viability level revealed by MTT test was unchanged for PMMA samples compared to control cells. The viability level revealed by culture medium LDH levels test , as well. Autophagy seems to be uploaded as a pro-survival mechanism. The viability level revealed by MTT test was reduced in the case of 3D printed samples. The culture medium LDH levels were significantly increased for the 3D printed

samples compared to control cells.The results after 24 hours incubation showed that the viability level revealed by MTT test was insignificantly changed for PMMA samples compared to control cells. The viability level revealed by MTT test was reduced by 43% of control in the case of 3D printed samples. Increased autophagy intensity in 3D printed incubated samples. Switch of autophagy from pro-survival mechanism to death initiator, probably by inducing cell necrosis.

Conclusions

In vitro cytotoxicity assays performed in monolayer cell cultures do not fully reflect the complex biological reactions in the oral mucosa. Due to the limitations of the present study, our data must be considered preliminary.

The need for improved biocompatibility testing could be addressed by using tissue engineered human oral mucosa with fibroblasts and keratinocytes in multilayer cell culture models.

Keywords

3D printed materials, cytotoxicity, cellular changes and autophagy levels

---

COMPARATIVE EVALUATION OF THE WEAR OF POLISHED OPAQUE, TRANSLUCENT ZIRCONIA CROWNS AND OPPOSING NATURAL ENAMEL– A SPLIT MOUTH STUDY

Sherish Khan, Veena Jain, Dheeraj Koli, Aditi Nanda
Centre for Dental Education and Research All India Institute of Medical Sciences,
New Delhi, India

Research Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

To evaluate and compare the wear of polished monolithic zirconia crowns, polished translucent zirconia crowns, and opposing natural teeth one year after cementation of crowns.

Materials & Methods

This prospective, in-vivo, split mouth study included a total of 11 subjects within age range of 18-45 years, irrespective of gender. Subjects requiring two crowns, one on either side of mandibular first molar were selected following the inclusion/exclusion criteria. A computer-generated randomization table was used to allocate crown materials on right and left side. Definitive crowns were adjusted before cementation and were polished using zirconia polishing kit. Impression of restored and opposing arch was made immediately after cementation (baseline) and one year post cementation. Models were made, scanned using a white light scanner (SmartSCAN 3D HE Scanner; Breuckmann, USA) and superimposed using 3D software (Polyworks; Innovmetric Software Inc, GERMANY) to evaluate wear in micro meter.

Results

The data was analyzed using SPSS (21.0 version). The mean wear of translucent zirconia crown (16.7 ±3.1 µm) was more compared to opaque zirconia crown (15.8 ±3.3 µm) but the mean difference was statistically non-significant (P=0.64). The wear of natural enamel (NE) opposing translucent zirconia crown (PM=38.7 ±10.7, M=54.0 ±12.7) was more than the wear of NE opposing opaque zirconia crowns (PM= 38.1 ±11.1, M=53.7 ±12.9). The mean difference in wear of NE opposing opaque zirconia crowns and NE opposing translucent zirconia crowns was statistically non-significant (P=0.582). But the wear of NE opposing both the crowns was significantly higher (P<0.001) than the crown material. The wear of natural enamel opposing both the zirconia crowns was significantly higher (P<0.001) as compared to wear of natural enamel vs natural enamel.

Conclusions

The enamel opposing the opaque and translucent zirconia crowns wears at faster rate than the zirconia crowns. Although both opaque and translucent zirconia crown lead to almost equal amount of wear of opposing natural enamel. The natural enamel opposing zirconia crowns showed more wear as compared to natural enamel opposing natural enamel.

Keywords

Wear, Zirconia, Translucent Zirconia, Opaque zirconia, Crown

ADHESION OF CANDIDA ALBICANS TO CAD/CAM DENTURE BASE RESIN WITH THE PRESENCE OF SALIVA

Takafumi Kobayashi, Masahiro Ryu, Kazuyuki Ishihara, Takayuki Ueda
Tokyo Dental College, Tokyo, Japan

Research Presentation

Topic: Biology in Prosthodontics

Purpose / Aim

The aim of the current study was to investigate the adhesion of C. albicans to CAD/CAM denture base resin with the presence of saliva.

Materials & Methods

Denture base resin specimens were prepared using the following four types of fabrication methods: heat polymerization method (PMMA), milling method (Milled), digital light processing method (DLP), and material jetting method (Jet). Five specimens (10 × 10 × 2 mm) per fabrication method were prepared and polished using silicon carbide abrasive paper up to #1200. The areal arithmetic mean roughness (Ra) of the surfaces was measured. Whole saliva was collected from one healthy volunteer, clarified via centrifugation, and filtered. The specimens were immersed in the saliva for 30 min. Specimens were then incubated in the C. albicans culture solution for 24 h. After rinsing the specimens, luminescence intensity (LI) was

evaluated using an adenosine triphosphate bioluminescent assay. One-way ANOVA followed by Tukey's method was used to compare the Ra, whereas the Kruskal–Wallis test followed by the Bonferroni method was used to compare the LI among the fabrication methods ($\alpha = 0.05$).

Results

The mean values for Ra with PMMA, Milled, DLP, and Jet were 0.08 ± 0.02, 0.11 ± 0.02, 0.11±0.01, and 0.11±0.01 μm, respectively. Significant differences in Ra values were observed between PMMA and other fabrication methods. The median values of LI with PMMA, Milled, DLP, and Jet were 0.617 × 102, 1.541 × 102, 2.000 × 102, and 5.541 × 102 RLU, respectively. Significant differences in LI values were observed between PMMA and other fabrication methods. Among the CAD/CAM denture resins, Jet had particularly high LI values, with differences observed between Jet and Milled.

Conclusions

In the presence of saliva, denture base resins fabricated using CAD/CAM methods, especially Jet, showed higher adhesion of C. albicans than did those fabricated using PMMA.

Keywords

CAD/CAM denture, microbial adhesion, saliva

CONTINGENT VIBRATION FEEDBACK STIMULATION TO INHIBIT SLEEP BRUXISM

Kohei Maejima, Masayuki Takaba, Yuka Abe, Hironobu Ohara, Risa Aoki, Megumi Matsuyama, Shiori Okuhara, Ai Iizumi, Kazuyoshi Baba
Showa University School of Dentistry, Tokyo, Japan

Research Presentation

Topic: Occlusion and Temporomandibular Disorders

Purpose / Aim

While sleep bruxism (SB) is responsible for a variety of pain and dysfunctional conditions in the orofacial region, there is no definitive method to control it. Therefore, we have developed an occlusal splint (OS)-based contingent vibratory feedback stimulation system to control SB. The aim of this study was to investigate the effect of the system on SB over a 14-week period.

Materials & Methods

Six patients who met the criteria for clinical SB diagnosis were included in this study after providing informed consent. A force-based SB detection system, including a pressure-sensitive piezoelectric film placed internally in the OA, triggered a vibrator attached to the OA. Vibratory stimulation was withheld during the first 3-week adaptation period, applied during the 9-week stimulation period (4th–12th week), and again withheld during the post-stimulation period (13th and 14th weeks). Two SB-related variables were recorded every night, including the number and duration of SB events per hour in a home environment. The SB-related variables

of the 4th, 8th, 12th, and 14th weeks were compared with those of the 3rd week as the baseline. (Study Protocol Registration ID: jRCTs032220401)

Results

The median duration of SB events was 44.5 s/h at the baseline (3rd week), which decreased dramatically when the vibration stimulation was applied (25.9 s/h at 4th week; 17.8 s/h at 8th week; 29.4 s/h at 12th week) and then returned to the baseline level after the vibration was discontinued (50.1 s/h at 14th week). The same trend was found for the median number of SB events (3rd week, 7.1 times/h; 4th week, 5.3 times/h; 8th week, 4.0 times/h; 12th week, 4.6 times/h; and 14th week, 7.4 times/h, respectively). Overall, vibration stimulation decreased the SB event duration by 34–60% and the SB event number by 25–44% consistently during the stimulation period and these inhibitory effects diminished after feedback stimulation was withheld.

Conclusions

These results suggest that the contingent vibratory feedback stimulation system may continuously inhibit SB for a 9-week period but this inhibitory effect may not be valid after the stimulation is withheld.

Keywords

sleep bruxism, biofeedback, occlusal splint

COMPARISON OF EXCURSIVE JAW MOVEMENTS REPRODUCED BY USING VIRTUAL ARTICULATORS: A PILOT STUDY

YeongSeok Kwon, ChanYoung Park, Seoungjin Hong, Janghyun Paek, Kwantae Noh, Ahran Pae, HyeongSeob Kim, KungRock Kwon
Department of Prosthodontics, Kyung Hee University College of Dentistry, Kyung Hee University Medical Center, Seoul, Republic of Korea

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

Dental clinicians tend to compensate occlusal errors of dental prostheses by chair-side adjustments. A debatable cause of occlusal errors is mounting in arbitrary orientations instead of using the patient's mandibular hinge axis obtained from facebow transfer. Nowadays, various methods using virtual articulators are proposed, in effort to increase mounting accuracy and to accurately reproduce patients' excursive jaw movements. For example, CBCT data or facial scan data are used to detect patient's mandibular hinge axis for virtual facebow transfer. Also, jaw motion tracking devices can be used to reproduce patients' jaw movements in virtual spaces.

The purpose of this study is to evaluate how two virtual mounting methods (virtual facebow transfer using CBCT vs. mounting in arbitrary orientations) accurately reproduce excursive jaw movements, compared to jaw tracking devices.

Materials & Methods

Control and Experimental group

For the control group, the actual excursive movements of the mandible were recorded by Jaw Motion Analyzer. For experimental group1, virtual facebow mounting was done on a semi-adjustable articulator in a dental CAD software in reference to the Bergstrom's Point. For experimental group2, which represents arbitrary mountings, the orientations of the casts of experimental group1 were altered by translating the cast superiorly, inferiorly, anteriorly, and posteriorly.

Two experiments were done.

Five time points were picked. (T0:maximal intercupation, T1:T4/4, T2:T4/2, T3:3T4/4, T4:Edge-to-edge of canines for laterotrusion and incisors for protrusion)

For the first experiment, pathways of excursive movements were tracked and compared by picking a point on the mesiopalatal cusp of maxillary first molar.

For the second experiment, disclusion time was found in each group and was compared by analyzing the distribution of occlusal contacts captured on each time point.

Results

In laterotrusive movements, mounting with virtual facebow transfer using CBCT reproduces excursive jaw movements more accurately than arbitrary mountings. Also, disclusion time showed significant changes when mounting in arbitrary orientations instead of using virtual facebow transfer using CBCT. However, no significant differences were observed in protrusive movement, regardless of the casts' mounting orientations. Within the limitations of our pilot study, the results indicate that even in virtual conditions, mounting in incorrect orientations may cause occlusal errors in excursive movements. When diagnosing occlusal interferences by disclusion time on articulators, accurate mounting with facebow transfer may be demanded

Conclusions

(1) Within the limitations of this study, excursive movements reproduced by virtual transfer is more similar to the actual excursion than excursive movements reproduced by arbitrary mountings.

(2) This indicates that even in virtual conditions, mounting in incorrect orientations will cause occlusal errors in excursive movements.

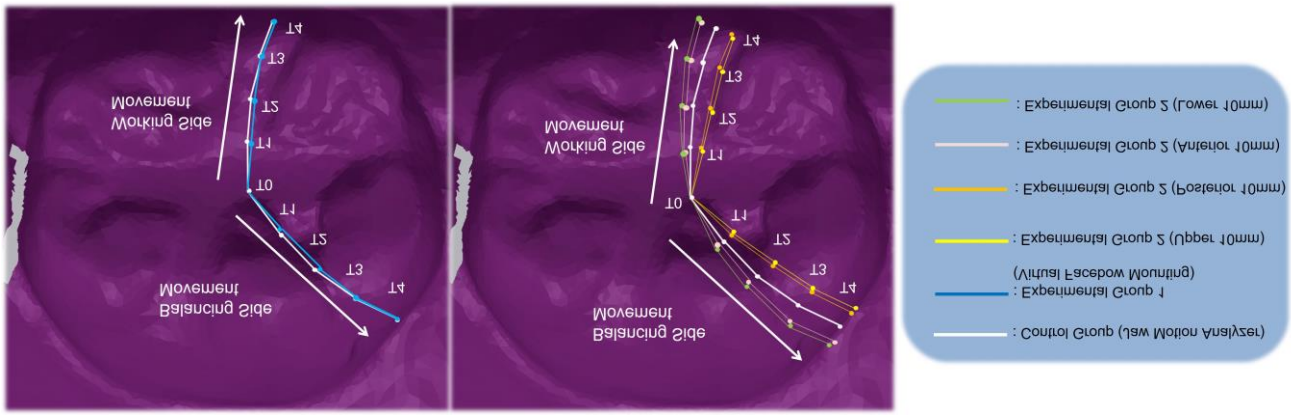
(3) When diagnosing occlusal interferences by disclusion time, accurate mounting with facebow transfer may be demanded.

(4) Virtual methods do not completely eliminate the risk of occlusal errors when mounting. Understanding of correct mounting method itself would be more important.

Within the limitations of this study, this study proposes a method to virtually compare dynamic occlusion displayed in semi-adjustable articulator to the actual dynamic occlusion recorded by jaw motion tracking devices. Also, this study serves as an example to predict errors in dynamic occlusion when the casts are mounted in incorrect orientations.

Keywords

jaw movements, mandibular hinge axis, facebow transfer, mounting accuracy, virtual articulator, jaw motion tracking device, Bergstrom's Point, laterotrusive movement, protrusive movement, disclusion, occlusal errors of dental prostheses, occlusal interference,



REMOVABLE PARTIAL DENTURE TO RESTORE EDENTULOUS AREA DUE TO THE MAXILLECTOMY WHICH WAS RESTORE WITH SOFT-TISSUE GRAFT WITHOUT SUPPORTING BONE

Jonghyuk Lee, Sooyeon Shin, Yunwoo Lee, Philjoon Koo, Hyojung Kim
Dental College of Dankook University, Cheonan, Republic of Korea

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

Patients who have undergone maxillectomy suffer from oro-antral communication and loss of dentition. Several methods have been applied to close the defect and restore the dentition including surgical reconstruction and prosthetic rehabilitation. Some patients restore the defect with dental implants and complex adjunct surgery, however some patients still need conventional prosthetic rehabilitation. In this presentation, a case in which the maxillary defect was surgically closed and the edentulous area was restored with conventional removable partial denture is reported.

Materials & Methods

A male patient in his early 40s presented the clinic with the complaint of his lower jaw seemed to be distorted to one side. The patient had diagnosed with maxillary sinus cancer in the left maxilla in 2020 and underwent left maxillary resection surgery and radiation therapy. The maxillary defect was closed with free-flap soft-tissue graft surgery leaving #24,25,26,27 teeth missing. The area has been fallowed-up for 3 years without recurrence and the patient wanted to restore the missing area. Since the defect was closed without bony support, meticulous consideration was needed to design the partial denture. A trial denture was delivered and the patient's adaptation was evaluated. After the adaptation period, a definitive partial denture was designed and delivered.

Results

Considering the patient's young age, only minimal modification was applied to the remaining natural teeth (rest seat on tooth #17, 14, 23). The partial denture was designed with consideration in mind so that the large tissue-ward movement of the denture due to the lack of support in the missing area does not unreasonably affect the remaining teeth. The undercuts on the palatal side of the remaining tooth was used to obtain retention, so as to the tissue-ward rotational force was not applied to the tooth when the denture sinks into the missing area.

Conclusions

The use of trial denture encouraged patient's motivation and successful adaptation to the final denture. When a denture is placed on a defect which was closed with soft tissue graft without bony support, the stability of the denture is challenged by the mobility of the defect. A proper denture design is necessary to reduce any possible adverse effects. By reporting this case, we hope to help similar cases.

Keywords

Maxillectomy, maxillectomy defect closed with soft tissue graft. partial denture. denture stability. partial denture design.

EFFECTS OF FABRICATION TECHNIQUES AND POSTERIOR PALATAL SEAL ON RETENTION OF DENTURE BASE: AN IN VIVO STUDY

Yu-Ciah Liu, Tsung-Chieh Yang, Tong-Mei Wang, Li-Deh Lin
National Taiwan University, Taipei, Taiwan

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

This in vivo study was to evaluate the effects of different fabrication techniques (conventional press molding, CAD/CAM milling, and 3D printing), and posterior palatal seal design on the retention of the denture base.

Materials & Methods

9 participants (2 male; 7 female, average 64.5yrs) with edentulous maxillary arches were enrolled. After border molding and final impression, the maxillary master casts were scanned(3Shape) and denture bases were designed by CAD simulation design software (3Shape). Denture bases were made of different fabrication techniques including: conventional press molding (Lucitone199) (Con group), CAD/CAM milling (Yamahachi), and 3D printing (Enlighten). For CAD/CAM milling (Mil) and and 3D printing (Prt) denture bases, we divided them into 4 subgroups: Mil group and Prt group were denture bases without posterior palatal seal while Mil-P group and Prt-P group were those with posterior palatal seal. A universal testing machine (Jobho) and a custom-designed facebow (Mega) were used to measure denture retention (gw). Each denture base was subjected to a vertical pulling force 3 times. The average retention of the 5 different denture bases was compared using Generalized estimating equation (α=.05).

Results

About the retentive force, there was no significant difference between the Con group(1669gw) and the Mil-P group (1593gw). Both Con group and Mil-P group were significantly higher than the Prt-P group (853gw). There was no significant difference between Mil(14 22gw) and Mil-P(1593gw) or between Prt(840gw) and Prt-P(853gw).

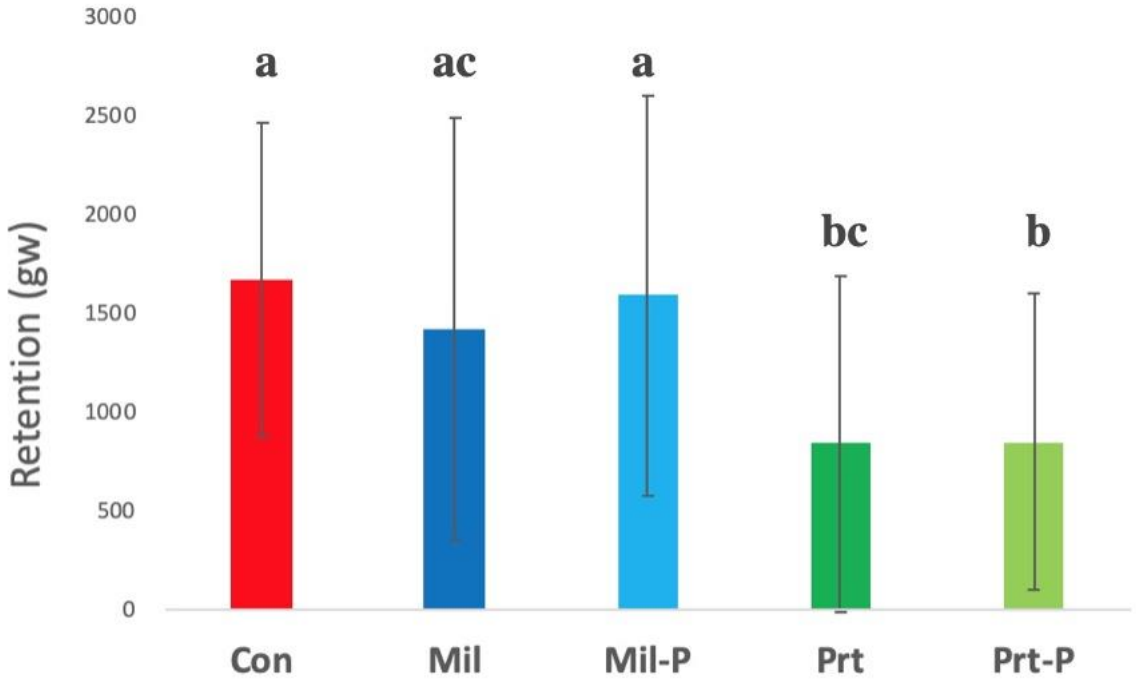
Conclusions

1. The CAD/CAM milling denture bases presented similar retention force with the conventional press molding denture bases, followed by the 3D printing denture bases.

2. There is no significant difference between the retention of denture bases with or without the design of posterior palatal seal.

Keywords

CAD/CAM milled, 3D printing, complete denture, retention force, posterior palatal seal, adaptation.



MY ORGANISATION: WHY DO I BELONG – A PILOT STUDY

Matshediso Mothopi-Peri[1], Noland Naidoo[2], Bora Bagis[3], Sunyoung Ma[4]
[1]University of the Witwatersrand, Johannesburg, South Africa. [2]UCL Eastman Dental Institute, London, United Kingdom. [3]Istanbul Health and Technology University, Istanbul, Turkey. [4]University of Otago, Dunedin, New Zealand

Research Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

Covid-19 pandemic has reminded us how much we need each other as people, irrespective of who we are and where we reside in the world. We continue to witness how everybody is working together to bring their knowledge and resources in fighting the pandemic. Organisations such as the International College of Prosthodontists brought its members together to spread the message of the prevention of the spread of the coronavirus at a time when it was very crucial to do so. This highlighted one of the important reasons to belong to such an organisation. Professionals belong to international organisations for different reasons, and their views on what the organisations offer, and the benefits of being a member, are dependent on each individual. The aim of this study is to establish the views of Prosthodontists about their organisations and improvements that they would like to see.

Objectives

1. To identify Prosthodontists who belong to the International Prosthodontic organisations.
2. To establish their views about what they believe the organisations are offering and what they would like to see improved.

Materials & Methods

The study is a quantitative study, and the relevant data will be obtained by a formulated questionnaire. The questionnaire will be distributed by email to the participants.

Results

The results will be analysed and presented at the London Satellite meeting of the ICP in August/September 2023.

Conclusions

The intention of this pilot study is to establish if there is a need to do a more in-depth investigation into this topic. If the results show the need, the study will be expanded. It is believed that the role of international organisations goes beyond just the profession, and this deserves to be investigated.

The authors are hopeful that the results of this pilot study will benefit not only the organisations and their members but also the entire global community. International organisations such as the ICP have a lot of importance and presence to make a difference in the world.

An Axis Displacement of Single Implant without Osseointegration Failure after Loading in the Maxilla: 10-year Case Series

Jung Hyun Nam, Jong-Hee Kim, Yang-Jin Yi
Seoul National University at Bundang Hospital, Gyeongi-do, Republic of Korea

Case Presentation

Topic: Implant Prosthodontics

Purpose / Aim

The purpose is to investigate and discuss the causes of the implant axial displacement in which osseointegration is maintained through ten years of case series.

Materials & Methods

In this case report, we present several atypical and rare phenomena that occurred over a 10-year period, where internal connection implant restored with cement-retained prostheses in maxillary canine and premolar region that has been axially displaced by 3~8 degrees and several millimeters at short and long-term follow-up. None of the patients with displaced implants showed clinical symptoms such as

pain, inflammation signs, or signs of osseointegration failure such as implant mobility or radiographic changes. While there have been reports of infra-positioning of implant prostheses due to life-long craniofacial growth and sink-down phenomenon from the different implant connection types, implant axial displacement without destruction of osseointegration is the first report to the best of the author's knowledge. Additionally, for quantitative analysis, digital superimposition comparing initial and new cast models was done to measure the amount of change in the implant.

Results

Implant tilting was predominantly observed in the maxillary anterior region, specifically in the canine or premolar area, where lateral forces are concentrated. This phenomenon occurred within an environment characterized by thin cortical bone and low bone mineral density.

Following the axial displacement of an implant, two cases exhibited no occlusal contact, while two other cases showed only one point of occlusal contact. None of the patients with axially displaced implants exhibited mobility or clinical symptoms, indicating normal implant functionality.

Irrespective of the rate of osseointegration, which may be influenced by osteopenia or osteoporosis, as long as the implant remains within the micromotion threshold through a partial modeling/remodeling process, successful osseointegration can be maintained. Based on the above observations, it is reasonable to presume that the implant can be displaced under constant lateral force in an osteopenia environment of the maxilla with little cortical bone.

Conclusions

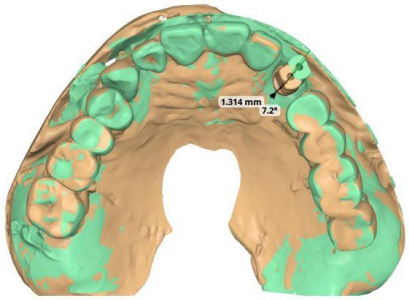
Through the objective analysis of short-term and long-term case studies, it was confirmed that implant displacement can occur to a significant degree, even when osseointegration is considerably stable and intact after loading.

Keywords

dental implant, axial displacement, osseointegration, complication, internal connection, cement-retained prosthesis

Superstructure transferred to initial cast model.

Superstructure placed on new cast model.



Superimposition of initial and new cast model

EFFECTS OF ORAL HYPOFUNCTION ON CHEWING DURATION IN OLDER ADULTS

Midori Ohta, Ayaka Nishimiya, Kaoru Sakurai, Masahiro Ryu, Takayuki Ueda
Tokyo Dental College, Tokyo, Japan

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

It has been reported that deterioration of oral function is associated with malnutrition; however, the process by which this occurs remains unclear. This study aimed to clarify the relationship between oral hypofunction (OHF) and chewing duration in older adults.

Materials & Methods

We examined 80 participants aged 65 years or older who consumed regular-consistency diets. Participants were instructed to consume 5 g of cooked rice. We recorded chewing duration (seconds) until the last swallowing using an electromyogram and a video camera. Additionally, we assessed seven oral-related factors (oral hygiene, oral dryness, occlusal force, tongue–lip motor function, tongue pressure, chewing function, and swallowing function) according to OHF diagnostic criteria, as defined by the Japanese Society of Gerodontology in 2016. Multiple linear regression analyses were performed to examine OHF, age, and sex as explanatory variables and chewing duration as an objective variable. Moreover, multiple linear regression analyses were performed to examine oral dryness, occlusal force, tongue–lip motor function, tongue pressure, masticatory function, and sex as explanatory variables and chewing duration as an objective variable. This study was approved by the Ethics Committee of Tokyo Dental College (No. 683).

Results

Fifty-seven patients (78 ± 7 years old) were diagnosed with OHF, and 23 patients (75 ± 6 years old) were diagnosed with non-OHF. The chewing duration in the OHF group was 36.0 ± 18.2 s and 24.5 ± 12.1 s in the non-OHF group.

Regression analysis showed a positive relationship between OHF ($\beta = 0.243$, $p = 0.029$) and age and chewing duration. The tongue–lip motor function was associated with chewing duration and each oral function in a regression analysis ($\beta = -0.293$, $p = 0.019$).

Conclusions

These results indicated that chewing duration was prolonged due to the deterioration of oral function. In addition, chewing duration was related to tongue–lip motor function among each oral function. Because the tongue–lip motor function, represented by the /ta/ sound pronunciation rate, is assumed to affect the ability to form a bolus, it was suggested that the decline in these functions is related to mealtimes. Oral hypofunction was associated with prolonged chewing duration in older adults.

Keywords

Oral hypofunction, aging, chewing duration

TRUENESS OF 3D-PRINTED INTERIM FIXED DENTAL PROSTHESES: A COMPARATIVE *IN VITRO* STUDY

Mihaela Pantea[1], Andreea Cristiana Didilescu[1], Robert-Cătălin Ciocoiu[2], Marina Imre[1], Ana Maria Cristina Țâncu[1], Elena Creciun[1], Alexandru Eugen Petre[1]
[1]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania. [2]University Politehnica of Bucharest, Bucharest, Romania

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The aim of this study is to evaluate the trueness of interim fixed dental prostheses obtained via additive technology by the means of a computerised dimensional comparison made between the 3D-printed prostheses and their virtual project.

Materials & Methods

Two reference dental models (Frasaco GmbH, Tettnang, Germany) were used for this research: one presented intact artificial teeth, and the other contained prepared teeth designated for complete crown coverage and different edentulous spaces. These models were scanned with an extraoral scanner (Medit T 500 Desktop 3D Scanner, Seoul, South Korea). Based on the generated STL files, digital projects for different dental prostheses with various length and topography were made (single unit, three-, four-, six-, 13- and 14-unit prostheses). The external contour of the prostheses was achieved by copying the anatomical elements of the intact digital model. The obtained 3D-printed prostheses were scanned on all surfaces with an intraoral scanner (TRIOS 3 Battery Cart, 3Shape A/S, Copenhagen, Denmark). The latest generated STL files and the STL files corresponding to the virtual projects of prostheses were superimposed using a 3D-analysis software (Geomagic Control X), at a tolerance of 50µm and 100µm.

Results

The obtained results indicate that the dimensional compatibility between the 3D-printed interim fixed dental prostheses and their virtual projects varies depending on the length and topography of the prostheses, regardless of the analysed tolerance. The dimensional compatibility ranged from 100% for a single-unit dental prosthesis to 99.94% for a three-unit dental prosthesis, 99.69% for a four-unit dental prosthesis, 99.64% for a six-unit dental prosthesis, 98.22% for a 13-unit dental prosthesis, and 96.60% for a full arch prosthesis.

Conclusions

Based on the findings of this in vitro study, the following conclusions can be drawn: the trueness of the analysed 3D-printed interim fixed dental prostheses decreases slightly as the length of the prostheses increases; the presented computerised dimensional comparison methodology provides information useful in assessing the internal, marginal, and external fit of interim fixed dental prostheses, and could contribute to their digital validation.

Keywords

3D-printing; Digital dentistry; Trueness; Accuracy; Fixed dental prosthesis; Interim prosthesis; Digital technology

---

RECURRENT ABUTMENT SCREW LOOSENING AS A SIGN OF IMPLANT FRACTURE: A REPORT OF 2 CASES

Zi Ying Phang, Ken Tan
National Dental Centre Singapore, Singapore, Singapore

Case Presentation

Topic: Implant Prosthodontics

Purpose / Aim

Fracture of implant fixtures represent a rare but catastrophic complication of dental implant therapy. Reported incidences range from 0.08% - 0.6% over 5 years. Clinical symptoms that were reported before implant fracture included screw loosening, peri-implantitis and peri-implant mucositis.

This report describes 2 cases which presented with repeated screw loosening of implant-supported single crowns prior to diagnosis of implant fracture.

Materials & Methods

Mr K completed restoration of his implant-supported single crown #46 in February 2014. He complained of loose implant crown and was diagnosed with peri-implantitis in June 2019. This was initially managed by replacement of the abutment screw and then for the replacement of his implant crown upon repeated screw loosening while being concurrently managed for peri-implantitis. 6 months after the new implant crown was issued, he presented with another episode of screw loosening. Vertical fracture of his implant fixture was discovered.

Mr R completed restoration of his implant-supported single crown #26 in March 2015 and first presented in September 2017 with complaint of loose implant crown. He was seen for replacement of the abutment screw and issued with a nightguard for nocturnal bruxism. Mr R presented again in September 2022 complaining of a loose implant crown. Upon removal of the crown, a vertical fracture on the implant fixture was observed.

Results

Loosening of the abutment screw has been reported as a frequent complication in implant-supported restorations. Management is typically by retightening the old abutment screw or replacement with new abutment screws. Currently, there are no guidelines or evidence regarding the management of implant restorations with repeated screw loosenings. This case report highlights the need for increased surveillance of patients with repeated screw loosening. Removal of the entire abutment-crown assembly and visual examination of the implant fixture should be undertaken to ensure that it remains intact.

Conclusions

With the increasing use of dental implants in tooth replacement, more patients with implant complications must be expected. While the reasons for abutment screw loosening remains unclear, there is also no consensus on ideal management. Variabilities in implant system designs and restoration options impedes our understanding of implant complications. This case report highlights the possibility of implant fixture when repeated abutment screw loosening is encountered.

Keywords

Implant, Complications, Fixture Fracture, Screw Loosening

MASTICATION IN PATIENTS WITH DIFFERENT TYPE OF REMOVABLE PROSTHETIC REHABILITATIONS – AN OBJECTIVE EVALUATION

Elena Preoteasa[1], Alexandra Melania Moraru Oncescu[2], Cristina Teodora Preoteasa[1]
[1]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania. [2]Private practice, Bucharest, Romania

Research Presentation

Topic: Removable Prosthodontics

Purpose / Aim

To assess masticatory function in patients wearing different type of removable prosthesis.

Materials & Methods

Patients wearing removable dentures were asked to chew a 10g carrot sample until they felt ready to swallow. Masticatory parameters recorded were: chewing time, the number of masticatory cycles, and particle size distribution of food bolus, the latter being assessed by multiple sieve method.

Results

Fifty-one patients were included, i.e. 15 completely edentulous patients with complete denture in both jaws (1st group); 15 partially edentulous patients restored by conventional

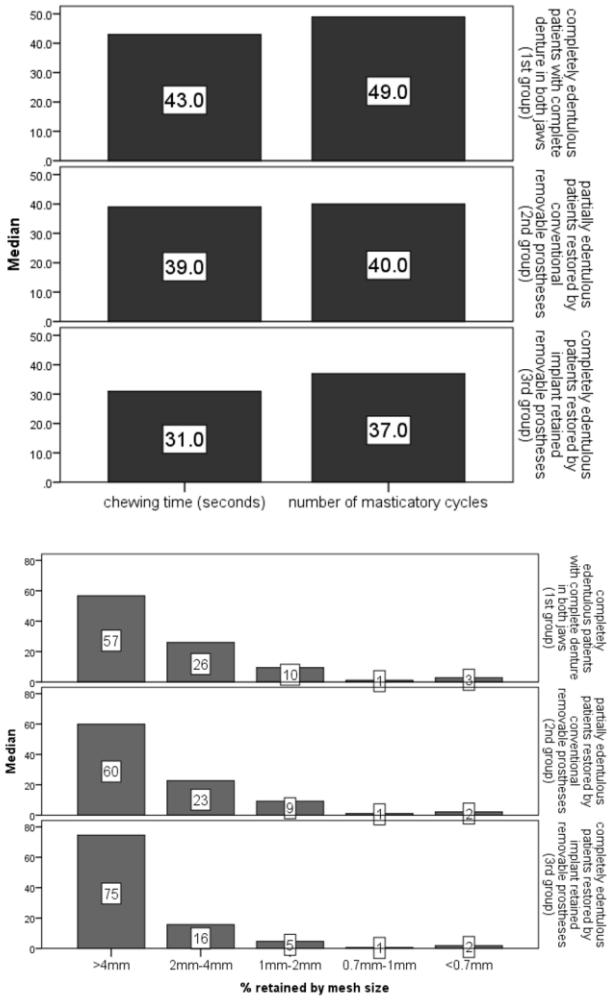
removable prostheses (2nd group); 21 completely edentulous patients restored by implant retained removable prostheses (3rd group). Chewing time and number of masticatory cycles were statistically different between groups ($p<0.001$ for both), lowest values being encountered in 3rd group, and highest 1st group. Mass of dried food bolus was not different between groups ($p=0.111$). Regarding particle size distribution of food bolus, percent retained was statistically significant between groups, regardless mesh size ($p<0.05$ for all). Percent retained by the largest mesh, of 4 mm, was higher in 3rd group (75%) than in the 1st group (57%) or 2nd group (60%), ($p=0.001$). Higher correlation coefficients found were between percent retained by largest mesh, of 4 mm, and chewing time ($r=-0.419$, $p=0.002$), and the number of masticatory cycles ($r=-0.360$; $p=0.009$).

Conclusions

Considering the limitations of this research, it is suggested that masticatory performance is different in relation to the type of removable prosthetic rehabilitation.

Keywords

complete denture, implant overdenture, chewing



COLOUR REGISTRATION OF NATURAL AND ARTIFICIAL TEETH BY SMARTPHONE IN DIFFERENT LIGHTING CONDITIONS

Cristina Teodora Preoteasa[1], Cora Costiana Ionașcu[2], Elena Preoteasa[1]
[1]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania. [2]Private practice, Bucharest, Romania

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

Assessment of accuracy of tooth colour registration and its differences according to type of teeth and differences in lighting conditions.

Materials & Methods

Colour of 41 teeth was assessed i.e. 14 natural teeth, 8 artificial acrylic teeth (Shade guide from NT-Shade), 19 ceramic artificial teeth (9 from Noritake shade guide; 11 from VITA Toothguide 3D-Master). Reference tooth colour was the one registered by VITA Easyshade spectrophotometer, it being comparatively assessed with photos taken with Samsung Galaxy S20 in different lighting conditions (simple, with flash, with supplementary artificial sources with colour temperature of 4000K, respectively 6500K).

Results

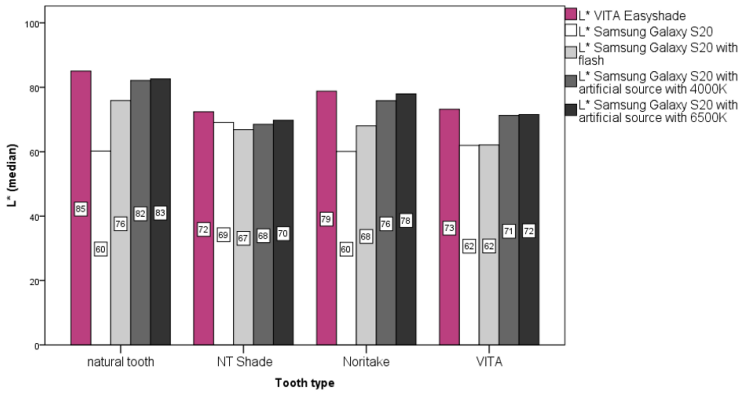
By usage of smartphone, a tendency toward lower values for L*, higher values for a* for natural and acrylic teeth, and lower values of a* for ceramic teeth, and higher values of b* was observed, the great majority of differences being statistically significant ($p<0.05$). Changes in lighting conditions had a variable effect on tooth colour. Colour difference ΔE was above 2 in general, indicating a perceptible difference, but lighting conditions had an important effect on it, variable according to tooth type (lower ΔE was observed with usage of artificial source with 6500K for natural and ceramic teeth, and with flash for acrylic teeth).

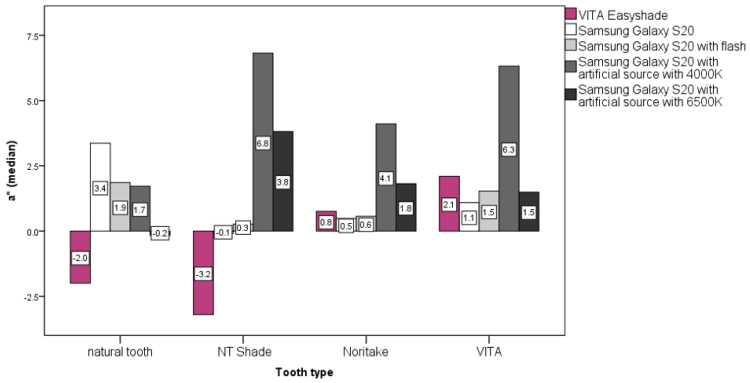
Conclusions

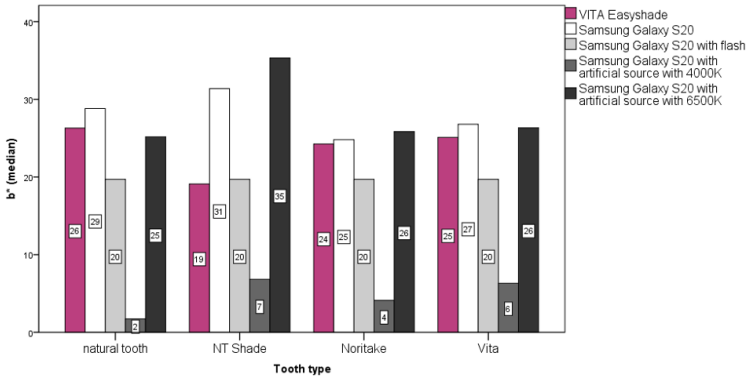
Usage of smartphone for colour registration per se does not have an adequate accuracy, but it can be considerably improved by changes of lighting conditions, which seems to be dependent on tooth type, and for the artificial teeth on the materials they are made of.

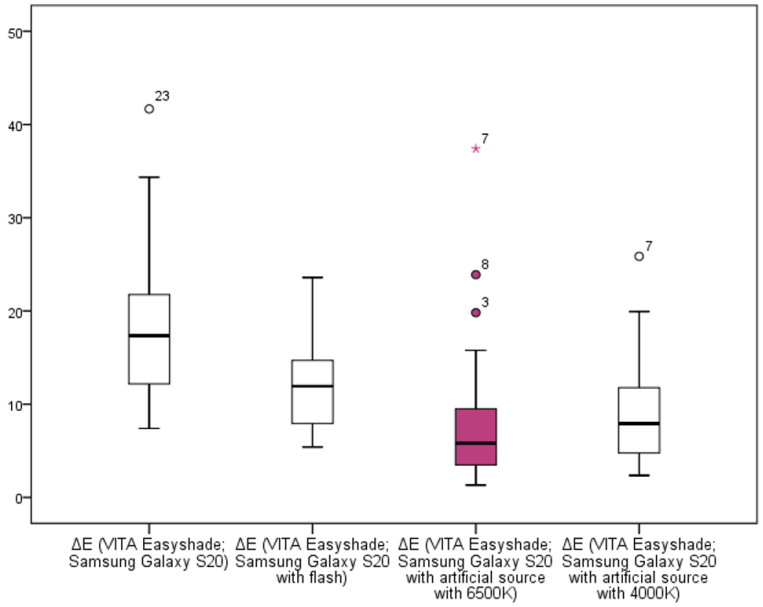
Keywords

acrylic teeth; ceramic teeth; spectrophotometer


L* VITA Easyshade
L* Samsung Galaxy S20
L* Samsung Galaxy S20 with flash
L* Samsung Galaxy S20 with artificial source with 4000K
L* Samsung Galaxy S20 with artificial source with 6500K
L* (median)
natural tooth
NT Shade
Noritake
VITA
Tooth type


VITA Easyshade
Samsung Galaxy S20
Samsung Galaxy S20 with flash
Samsung Galaxy S20 with artificial source with 4000K
Samsung Galaxy S20 with artificial source with 6500K
a* (median)
natural tooth
NT Shade
Noritake
VITA
Tooth type


VITA Easyshade
Samsung Galaxy S20
Samsung Galaxy S20 with flash
Samsung Galaxy S20 with artificial source with 4000K
Samsung Galaxy S20 with artificial source with 6500K
b* (median)
natural tooth
NT Shade
Noritake
Vita
Tooth type


ΔE (VITA Easyshade; Samsung Galaxy S20)
ΔE (VITA Easyshade; Samsung Galaxy S20 with flash)
ΔE (VITA Easyshade; Samsung Galaxy S20 with artificial source with 6500K)
ΔE (VITA Easyshade; Samsung Galaxy S20 with artificial source with 4000K)

EFFECT OF SOCKET MORPHOLOGY ON SEATING ACCURACY OF PREFABRICATED PROVISIONAL CROWNS ON IMMEDIATELY PLACED IMPLANTS PLACED IN SIMULATED MODELS

GUNJAN PRUTHI[1,2], Roy Judge[1], Jaafar Abduo[1], Luan Ngo[1], Attila Gergely[1]
[1]Melbourne Dental School, Melbourne, Australia. [2]PGIMER, Chandigarh, India

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To investigate the effect of different socket morphologies of a maxillary central incisor on seating accuracy of prefabricated provisional crowns placed over immediate implants inserted by freehand or static computer assisted surgery protocols.

Materials & Methods

An anatomic maxillary central incisor was digitally designed and subtracted from a virtual typodont model to simulate 3 different post extraction socket morphologies (SM) based on Class I (SM1), II (SM2) and III (SM3) radial root positions. A total of 30 models were allocated to each SM group and implants were placed with freehand (FH), pilot guided (PG) or fully guided (FG) protocols (n=10). All the implants were tapered with a diameter of 4.1 mm and length of 12 mm. Prefabricated crowns were digitally designed and fabricated based on the virtual implant planning. All the crowns were cemented on titanium abutments and seated over the placed implants. The models with the seated crowns were scanned by a laboratory scanner. Planned and placed crowns were superimposed virtually to calculate vertical, labio-palatal, and mesio-distal deviations in millimeters.

Results

Crowns placed over implants in group SM1 were most accurate in vertical direction (0.98±0.21mm) while SM3 crowns showed least deviation in labio-palatal (0.61±0.26), mesial (0.075±0.10) and distal (0.56±0.19) directions as compared to the planned crown position. SM2 crowns showed highest inaccuracies in vertical (1.54±0.40), mesial (0.22±0.20) and distal directions (0.79±0.29). Differences between planned and placed crowns was significant among the groups in all directions ($p<0.001$) except between SM1 and SM2 groups for labio-palatal direction ($p=0.99$) and distal direction ($p=0.34$), and between SM1 & SM3 groups for distal direction ($p=0.12$). FG implant placement led to most accurate crown positions. Mean error was highest with FH implant placement and the difference was statistically significant with the 2 computer assisted protocols ($p<0.001$).

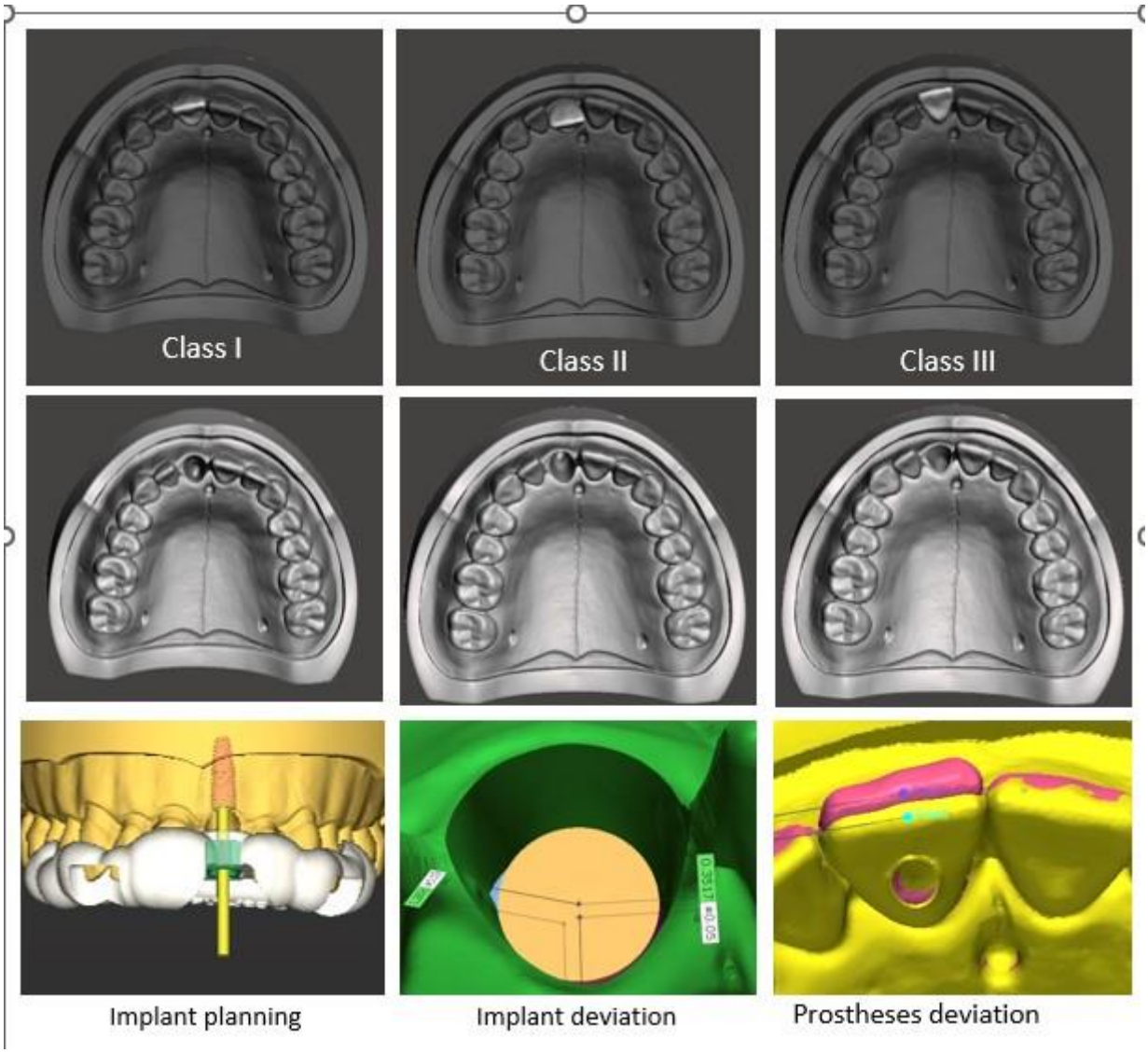
Conclusions

All crowns were associated with errors with highest inaccuracy in vertical and least deviation in mesial direction. The restorative dentist should be prepared for extra chairside time required to adjust the prefabricated prosthesis especially in class II SM which showed highest inaccuracy.

Computer assisted immediate implant placement protocols are recommended over freehand placement to increase the predictability of the procedure.

Keywords

Sagittal root position, Immediate implant placement, Guided implant placement, digital dentistry, simulated extraction sockets



EFFECT OF BUILD ORIENTATIONS ON THE WEAR RESISTANCE AND HARDNESS OF DENTURE TEETH FABRICATED WITH DIGITAL LIGHT PROCESSING

Khin Pyae Sone, Hidekazu Takahashi, Maiko Iwaki, Sahaprom Namano, Yuriko Komagamine, Manabu Kanazawa, Shunsuke Minakuchi
Tokyo Medical and Dental University, Tokyo, Japan

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

Build orientation is an important factor in additive manufacturing to achieve better mechanical properties of the fabricated products. Therefore, this in-vitro study evaluated the effect of build orientations on the wear resistance and hardness of denture teeth fabricated with digital light processing (DLP) compared with other denture teeth materials.

Materials & Methods

Disk-shaped specimens of 2mm in thickness and 8 mm in diameter were prepared using a monomer for denture teeth (dima denture teeth resin) and a DLP device (Cara Print 4.0) with three build orientations (0° for $AM_{0°}$, 45° for $AM_{45°}$ and 90° for $AM_{90°-1}$ and $AM_{90°-2}$). The same shape specimens were also fabricated using commercial poly-methylmethacrylate material (PM) (Livedent FB20), composite resin denture teeth material (CR) (Livedent Grace) and subtractive manufactured denture teeth material (SM) (Ivotion Dent) (n=8). Wear resistance was evaluated in terms of maximum wear depth and average wear volume loss after 50 k wear cycles using a ball-on-disc wear device in poppy seed slurry for three-body wear. Vickers hardness of these materials were also measured (MVK-H2). For statistical analysis, one-way ANOVA, followed by Tukey's honestly significant test, was performed for both wear resistance and hardness.

Results

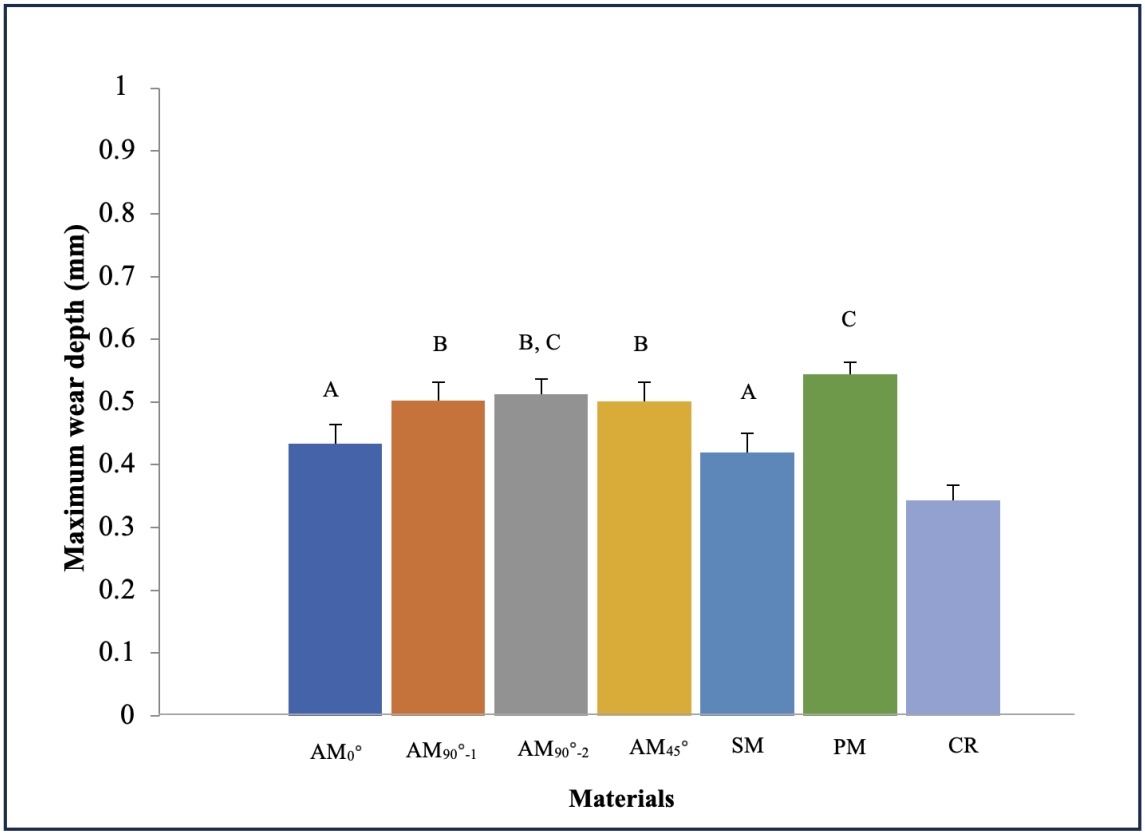
Statistically significant differences were found in maximum wear depth, average wear volume loss and hardness between all examined denture teeth materials ($p<0.001$). DLP fabricated specimens at 0° build orientation showed the statistically lowest wear depth and wear volume and highest hardness among three orientations. Among all resins, regarding wear, PMMA specimens exhibited the highest wear depth and wear volume while composite resin specimens showed the lowest. No significant difference was noted between subtractive specimens and horizontally fabricated specimens. Regarding hardness, composite resin specimens showed the statistically highest hardness while DLP fabricated specimens at 45° and 90° showed the lowest.

Conclusions

Horizontally fabricated denture teeth are recommended for digital dentures in regard to the wear resistance and hardness since they are comparable to subtractive manufactured denture teeth and better than PMMA denture teeth.

Keywords

wear resistance, hardness, build orientations, DLP fabricated denture teeth, digital dentistry



Same letters denote groups that are not significantly different ($p > 0.05$).

Fig. 1. Maximum wear depth of different denture teeth resins in three-body wear test

---

Investigation of compositions of currently available dental zirconia ceramics

Tünde Radics[1], Attila Csík[2], Csaba Hegedűs[1]
[1]University of Debrecen, Faculty of Dentistry, Department of Biomaterials and Prosthodontics, Debrecen, Hungary. [2]Materials Science Laboratory, Institute for Nuclear Research, Debrecen, Hungary

Research Presentation

Topic: Advanced Biomaterials

Purpose / Aim

Zirconia materials were introduced to dentistry as replacing materials of metal frameworks. Addition of stabilizers to pure zirconia, controlling grain size and application of adjusted cooling

process led to a partially stabilized tetragonal microstructure at room temperature. Transformation of tetragonal phase to monoclinic phase, activated by applied stresses, will result to the consumption of energy, inhibiting crack propagation and therefore increasing fracture toughness. The most effective dopant of zirconias is yttria (Y2O3), thus 3 mol% yttria stabilized tetragonal zirconia polycrystal (3Y-TZP) was used in the first-generation of dental zirconia. To improve translucency, lower alumina concentration and higher yttria content (4Y-TZP or 5Y-TZP) were applied lately. In this study the concentration of four component of dental zirconia were examined (Al, Y, Zr and Hf) in different zirconia generations and results were compared to the descriptions of manufacturers.

Materials & Methods

Zirconia discs of two manufacturers (Ivoclar Vivadent, Liechtenstein; Metoxit AG, Switzerland) and 3 different generation were prepared by milling and sintering plates (0,5x10x1,2mm). All specimens were treated with materialographic polishing up to 1mm diamond grain size (Struers LabPol-35, DP-Spray) and cleaned with ultrasonic vibration in acetone bath (Elman). Samples were investigated by Thermo Scios 2 DualBeam scanning electron microscopy (FIB-SEM, Waltham, MA, USA), equipped with Bruker Quantax Energy Dispersive X-ray system (EDS) for composition analysis. SEM-EDS analyses were performed on the polished side of the samples, which were fixed to the sample holder with conductive double-sided adhesive tape. An accelerating voltage of 20 kV and a beam current of 40 nA were used for the analysis. Results were statistically analysed with SPSS Statistics (Version 27, IBM Corp., Armonk, NY, USA).

Results

The proportions of the investigated components met the specifications when were given as a weight percentage range by the manufacturer. However, some other products shown significant differences when specifications contained concrete values (ex. 0,15 wt% Al content instead of 0.05 wt%).

Conclusions

The composition of a zirconia dental material plays a major role in the long-term success of a prosthodontic work. A well-controlled technology is needed to achieve best results.

Keywords

zirconia, composition, zirconia generations, 3Y-TZP, 4Y-TZP

USING INFORMATION AND COMMUNICATION TECHNOLOGY FOR 3D-PRINTED DENTURES: A CASE OF ORAL REHABILITATION OF HOSPITALIZED OLDER ADULTS WITH CARE NEEDS

Masahiro Ryu, Takafumi Kobayashi, Yoshinori Yamamoto, Midori Ohta, Takayuki Ueda
Tokyo Dental College, Tokyo, Japan

Case Presentation

Topic: Removable Prosthodontics

Purpose / Aim

Oral rehabilitation of older adults necessitates the use of removable dentures. The hospitalized older adults with care needs often require denture refabrication due to its loss or poor adaptation. An effective telecommunication with dental technicians is crucial, especially when dental clinics in medical hospitals have scarcity of such professionals. This approach aimed to fabricate dentures from the scanned data of the patient's old dentures and communicate with dental technicians using information and communication technology (ICT). This presentation showcases a case where oral rehabilitation was conducted for hospitalized older adults with care needs using 3D-printed dentures fabricated through ICT.

Materials & Methods

A 72-year-old man admitted to the convalescent rehabilitation ward in a rural hospital due to cerebral infarction. Although he had old complete dentures, he did not wear them since the onset of cerebral infarction. The dentures exhibited poor adaptation and severe artificial tooth wear. Consequently, after fabricating new dentures oral rehabilitation was planned.

The patient's old dentures were scanned, and the data were sent to a dental laboratory located at about 300 km. Subsequently, the duplicate dentures were fabricated using a 3D printer and used for maxillomandibular registration and bite pressure impression, after which they were scanned, and the data were sent to the dental laboratory. The dental technician designed the new dentures using computer aided design (CAD) software, and the dentist and dental technician shared the design remotely via the software. Finally, the new dentures were fabricated using the 3D printer.

Results

The new dentures were adjusted and inserted in 15 minutes demonstrating adequate retention, stability, and occlusal contact. In collaboration with the speech and occupational therapists, and the oral rehabilitation was performed using the new dentures, resulting in smooth improvement of the patient's oral function.

Conclusions

In dental clinics with no dental technicians, the real-time sharing of denture design between dentists and remote dental technicians was accomplished through CAD/CAM technology and ICT. This approach enabled the fabrication of new dentures in a shorter time period compared with the conventional methods, facilitating smooth oral rehabilitation.

Keywords

3D-printed dentures, CAD/CAM technology, Information and communication technology (ICT), Older adults

---

COMPARATIVE STUDY OF MEASUREMENT METHODS FOR ADDITIVE TECHNOLOGIES

Márton József Suta[1,2], Attila Csík[3], Dániel Nemes[4,5], Gábor Balogh[4], Mónika Béresová[6], Csaba Hegedűs[1]
[1]Department of Biomaterials and Prosthetic Dentistry, Faculty of Dentistry, University of Debrecen, Debrecen, Hungary. [2]Doctoral School of Dental Sciences, Doctoral Council of Medical Sciences, University of Debrecen, Debrecen, Hungary. [3]Materials Science Laboratory, Institute for Nuclear Research, Debrecen, Hungary. [4]Department of Mechanical Engineering, Faculty of Engineering, University of Debrecen, Debrecen, Hungary. [5]Doctoral School of Informatics, Debrecen, Hungary. [6]Department of Medical Imaging, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

Additive manufacturing technology, also known as 3D printing or rapid prototyping, is an increasingly popular, though relatively new area of dentistry. The aim of this study is to evaluate different measuring techniques to compare the accuracy of a model created by additive manufacturing technology.

Materials & Methods

Using a Formlabs Form 2 (Formlabs Inc., Somerville, MA, USA) SLA 3D printer a 10x10x2 mm test specimen was created based on a digital model. The test specimen was produced of Dental SG photopolymerization resin (Formlabs Inc., Sommerville, MA, USA). The specimen was examined and scanned by a Thermo Scios 2 DualBeam scanning electron microscope (FIB-SEM, Waltham, MA, USA) and with a 3Shape E4 lab scanner (3Shape, Copenhagen, Denmark) to visualise it. Fifty measurements were performed along both the X and Y axes with a disc micrometre (Absolute Digimatic, Mitutoyo Corp., Kawasaki, Japan); on the microCT (Skyscan 1272, Bruker Corp., Billerica, MA, USA) and on the digital microscope (Zeiss Smartzoom5, Carl Zeiss AG, Oberkochen, Germany) software after digital imaging.

Results

Our results showed that the difference was significant ($P < 0,05$) between the measurement methods in terms of X and Y values. The mean and standard deviation values, in order of the afore-listed methods for X and Y values, are as follows: 9915 ±14 µm; 9946 ±26 µm; 9887 ±28 µm; 9863 ±26 µm; 9869 ±17 µm; 9782 ±9 µm.

Conclusions

It can be concluded that the measurement methods are applicable to comparative studies with the above-mentioned specificities.

Keywords

rapid prototyping, SLA, accuracy, measurement methods

EFFECTS OF DIFFERENT SURFACE CONDITIONING METHODS ON THE REPAIR OF HYBRID CERAMICS

Gábor Suta[1], József M. Gáll[2], Attila Csík[3], Igor R. Blum[4], Csaba Hegedűs[1]
[1]Department of Biomaterials and Prosthetic Dentistry, Faculty of Dentistry, University of Debrecen, Debrecen, Hungary. [2]Department of Applied Mathematics and Probability Theory, Faculty of Informatics, University of Debrecen, Debrecen, Hungary. [3]Materials Science Laboratory, Institute for Nuclear Research, Debrecen, Hungary. [4]Faculty of Dentistry, Craniofacial & Oral Sciences, King's College London, London, United Kingdom

Research Presentation

Topic: Advanced Biomaterials

Purpose / Aim

Notwithstanding recent advancements in hybrid ceramic technology resulting in improved mechanical strength and durability they can fracture in clinical practice. The aim of this study was to evaluate the effect of different surface conditioning methods on the microtensile bond strength (μTBS) of the repair interface between hybrid ceramics and a nano-hybrid resin composite.

Materials & Methods

Two blocks of Vita Enamic (VITA Zahnfabrik™) and Katana Avencia (Kuraray™) hybrid ceramics were divided into two groups subjected to either polishing or sandblasting with aluminium oxide particles (n=4/group). Each mechanically surface-treated group was subsequently randomly assigned to one of the following surface conditioning subgroups (n=12/subgroup): iBOND Universal® (Kulzer), Heliobond (Ivoclar Vivadent®), and a commercially available porcelain etch containing 9% buffered hydrofluoric acid (Ultradent®) followed by the application of silane. Subsequently, resin composite material (Reflectys, Itena Clinical®) was added to all substrate surfaces in the subgroups. All blocks were sliced and the hybrid ceramic–resin composite specimens were subjected to μTBS testing.

Results

In the groups tested, Katana Avencia™ yielded significantly higher mean μTBS values than Vita Enamic™, irrespective of surface conditioning method and the surface conditioning of Katana Avencia™ with sandblasting and the use of porcelain etch resulted in the highest mean μTBS values (51,99 ± 5,45 MPa) compared to other subgroups ($p < 0.001$).

Conclusions

The repair of sandblasted Katana Avencia™ surfaces conditioned with the commercially available porcelain etch Ultradent® produces significantly higher repair bond strength values than the other tested repair protocols of Katana Avencia™ and Vita Enamic™.

Keywords

hybrid ceramic, surface conditioning, repair, resin composite

---

EFFECT OF CPC SINGLE AGENT MOUTHWASH ON THE BACTERIAL FLORA IN DENTURE PLAQUES

Hiroko Tahara[1], Kenji Ikeya[1], Hiromi Nishi[2], Akihiro Tsukahara[1], Fuminori Iwasa[1], Kazuyoshi Baba[1]
[1]Showa University School of Dentistry, Tokyo, Japan. [2]Hiroshima University School of Dentistry, Hiroshima, Japan

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

Polymethyl-methacrylate (PMMA) is the standard material for removable dentures. However, denture plaque tends to adhere to the PMMA surface layer and is difficult to remove completely by self-care. Therefore, we focused on cetylpyridinium chloride hydrate (CPC) which is widely used in toothpastes and mouthwashes in recent years.

The purpose of this study was to investigate the effect of CPC as a single agent on denture plaque adhesion in patients with maxillary complete dentures, and to analyze its effect on the bacterial flora of denture plaque using next-generation sequencing.

Materials & Methods

The subjects were 14 patients with maxillary complete dentures who attended the outpatient clinic of the Department of Prosthodontics of Showa University Dental Hospital from April 2021 to June 2022. This study was a randomized, controlled, single-blind study, where subjects were divided into two groups of 7 patients each in order of intervention. The first group received a placebo mouthwash in week 1 and a single agent CPC mouthwash in week 2, while the order of mouthwash use was reversed in the second group. The mouthwash was administered three times a day, after brushing teeth and washing dentures. After one week of use of each mouthwash, denture plaque area was measured after staining, and bacterial flora in denture plaque was analyzed by next-generation sequencing. Denture plaque area (significance level $\alpha = 0.05$), bacterial occupancy, and diversity were compared between the placebo and CPC groups.

Results

The denture plaque adherent area of the placebo group was 41.1 ± 7.6%, whereas that of the CPC group was significantly reduced to 29.0 ± 8.4% ($p < 0.05$). Next-generation sequencing analysis of the diversity of the bacterial flora showed no significant differences, but a significant decrease in Streptococcus spp. (49.9% to 36.1%, $p < 0.05$) and increase in Haemophilus spp. (6.4% to 19.8%, $p < 0.05$) and Capnocytophaga spp. (0.9% to 2.6%, $p < 0.05$) were found in the CPC group.

Conclusions

These results suggest that mouthwash with a CPC monotherapy solution inhibits adhesion of denture plaque on dentures and may function specifically against certain oral bacteria in dentures.

Keywords

Bacterial flora, Denture plaque, Homeostasis, Oral hygiene, Cetylpyridinium chloride hydrate

---

ACCEPTANCE OF SILVER DIAMINE FLUORIDE IN COMMUNITY-DWELLING AND INSTITUTIONALIZED ELDERLY

Mei Na Tan[1], Gabriel Keng Yan Lee[2], Shijia Hu[2]
[1]National University Centre for Oral Health Singapore, Singapore. [2]Faculty of Dentistry, National University of Singapore, Singapore

Research Presentation

Topic: Special Needs/Geriatrics

Purpose / Aim

Dental caries management with silver diamine fluoride (SDF) has been found to be safe and effective. Moreover, it can be provided in the absence of dental equipment, such as in long-term care facilities for institutionalized elderly. However, the presence of silver and the aesthetic concern of irreversible tooth discolouration may be barriers to acceptance in the elderly.

Materials & Methods

This is a cross-sectional survey which recruited community-dwelling and institutionalized subjects 65 years and above. Demographics and dental history were recorded. Subjects viewed a validated educational video describing SDF in the language they are most comfortable in. After which, they completed an interviewer-led survey about SDF acceptance. Questions included a) overall acceptance, b) aesthetic concerns by tooth location, c) its use to prevent pain/infection, and d) its use as an alternative to general anaesthesia (GA) in a 5-point Likert scale.

Results

A total of 103 subjects were recruited, including 52 community-dwelling and 51 institutionalized. There were more male (63.1%) than female (36.9%) subjects with an average age of 76.32±7.58 years. Results were dichotomized into accepting (agree, strongly agree) and not accepting (neutral, disagree, strongly disagree) to keep the findings robust. Overall, 70.9% of subjects were accepting towards using SDF to treat caries, they were more accepting to using SDF for the posterior teeth (72.8%) than the anterior teeth (42.7%). The acceptance rate increased when SDF is used to reduce pain/infection (84.5%) and prevent GA (73.8%). Community-dwelling subjects were significantly ($p<0.05$) more accepting towards using SDF to treat caries (80.8% vs 60.8%), using SDF to prevent pain/infection (94.2% vs 74.5%), and using SDF to prevent GA (86.5% vs 60.8%) than institutionalized subjects.

Conclusions

A majority (70.9%) of the elderly surveyed were accepting towards using SDF to manage dental caries. However, community-dwelling elderly were found to be more accepting than institutionalized elderly.

Keywords

Dental Caries; Geriatric Dentistry; Institutionalization; Preventive Dentistry; Silver Diamine Fluoride

---

AWARENESS AND ATTITUDES AMONG DENTAL PROFESSIONALS REGARDING THE DIGITAL WORKFLOW FOR COMPLETE DENTURES. A PILOT STUDY

Ana Maria Cristina Țâncu, Andreea Cristiana Didilescu, Mihaela Pantea, Bianca Ioana Cujbă, Mădălina Bicheru, Marina Imre
"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

The digital workflow has become in the last years a widely chosen prosthetic treatment protocol in fabricating complete dentures. The aim of this study was to assess the degree of awareness and attitudes regarding the digital workflow for obtaining complete dentures, among the dentists and dental technicians from Bucharest, Romania.

Materials & Methods

A cross sectional study was performed between the 10-th and the 31-st of January 2023. 66 participants were invited to participate anonymously and answer to a survey via a Goggle forms questionnaire. 39 dentists and 27 technicians responded to fifteen close-ended questions consisting of 5 socio-demographic items, and 10 items regarding their knowledge and attitude

about the digital solution for obtaining complete dentures. All the collected data were statistically analysed using IBM SPSS Statistics 25.

Results

Being asked about their knowledge on the digital workflow in this type of treatment, 72.7% of the participants, responded" No" and more, 63,6 % of them never followed this protocol in obtaining complete dentures. When asked about their considered opinion in relation to the benefits of this alternative prosthetic workflow, the most frequently selected answers were: efficiency of the procedure (reduced number of visits and reduced time of treatment, 72.7%), increased accuracy (62.1%) and archiving data without taking up physical space (60.6%). Regarding the disadvantages of the digital workflow, the most frequently selected were: high initial cost (78.8%), the difficulty of scanning mobile soft tissues (59.1%) and possible costs for software subscription (51.5%). Most of the participants (84.8%) answered affirmatively regarding their intention to use the digital solution in their future treatment protocols.

Conclusions

The survey 's results indicate that the majority of the dental professionals (72,7%) in Bucharest are not aware about the digital workflow in complete denture and never followed this protocol (63,6%). Even if there was a low overall sample size indicating a low statistical power, the results are useful, suggesting the urgent need to raise the theoretical and practical level of knowledge about the digital workflow in complete denture among dentists and dental technician, due to the important advantages offered by this type of prosthetic workflow and also due to the majority's intention to use this solution in the future.

Keywords

awareness, complete denture, digital workflow

AN IN-VITRO STUDY OF THE EFFECT OF TITANIUM SURFACE TREATMENTS ON THE BONDING BETWEEN ZIRCONIA CROWNS AND TITANIUM BASES

Ai Lin Tee, Sunyoung Ma, Joanne Choi, Suzanne Hanlin
Otago University, Dunedin, New Zealand

Research Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To establish a standardised bonding protocol when using titanium and zirconia by investigating the tensile bond strength between zirconia crowns and titanium (Ti) bases using different surface treatments.

Materials & Methods

One hundred and sixty 5Y-PSZ crowns (Lava™ Esthetic, 3M™) were fabricated according to a maxillary central incisor shape to fit Ti-bases (Straumann Variobase™, Institute Straumann AG). These were divided into two groups based on the Ti-base design (standard: n = 80; angled solution: n = 80). The crowns were cemented to the Ti-bases following one of four treatment protocols (n = 20 per group): no treatment, sandblasting only, new generation adhesive application only, and sandblasting and new generation adhesive application. The crowns were bonded to the Ti-bases using resin cement (RelyX™ Universal Resin Cement, 3M™). Half of each surface group (n = 10 per group) was subjected to artificial ageing (10,000 cycles, 5°C/55°C) using a thermocycler (Proto-tech, Dental Research Instruments, USA). Each specimen was connected to an implant analogue mounted on a jig. The retention forces between the crowns and Ti-bases were measured with a pull-off test.

Results

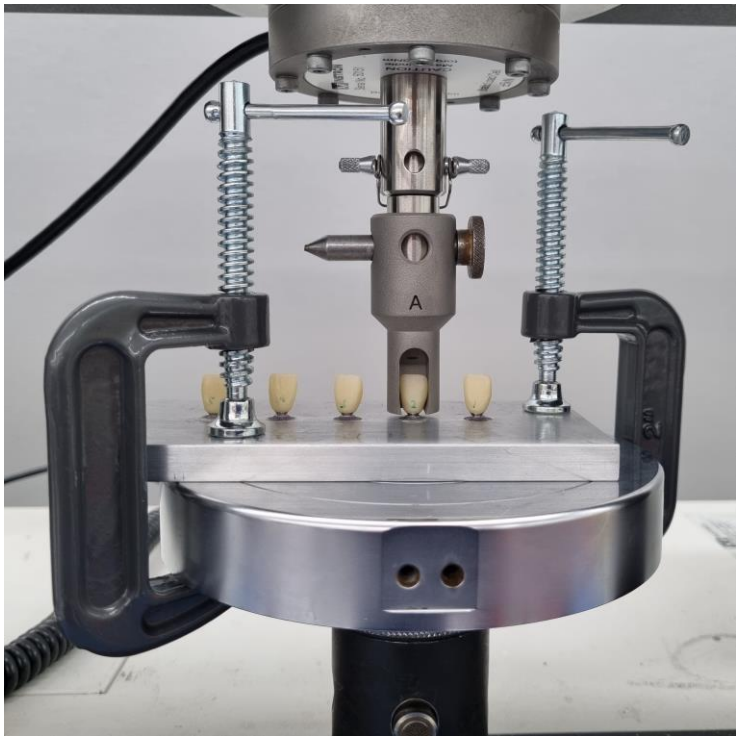
Retentive forces and tensile bond strengths for standard Ti-bases (474.6 ± 91.9 N; 11.5 ± 2.2 MPa) were significantly greater than angled solution Ti-bases (280.2 ± 70.4 N; 7.7 ± 1.9 MPa) ($p < 0.001$). No significant differences were found between different surface treatment groups of the same Ti-base designs.

Conclusions

Standard Ti-bases showed greater retention and tensile bond strength than angled solution Ti-bases. Within the limitations of this study, the different surface treatments used and thermocycling did not have an impact on the retentive forces and tensile bond strength.

Keywords

dental implant, surface treatment, tensile bond strength, retentive force, titanium base, zirconia crown, resin cement, thermocycling



OCULAR AND ORBITAL DEFECTS: THE WITS EXPERIENCE

Meriting Thokoane
Johannesburg, South Africa

Case Presentation

Topic: Multidisciplinary/Maxillofacial

Purpose / Aim

The aim of the case series is to highlight the change in the patient profile and the changing pattern of disease at the Maxillofacial Prosthetics clinic, Wits Oral Health Centre Johannesburg ZA.

Materials & Methods

Records of patients referred for eye prostheses to the maxillofacial prosthetics unit in the Department of Oral Rehabilitation at the Wits Oral Health Centre(WOHC) for ocular and orbital prostheses were reviewed. WOHC is the main institution to offer maxillofacial prosthetic rehabilitation. The centre receives patients from hospitals within Gauteng as well as patients from other provinces and other countries for the rehabilitation of all head and neck disfigurements.

Records reviewed were randomly selected samples of patients who had received or are receiving treatment in the unit from 2016-2018. Special attention was given to factors reported in the literature as peculiar to the pathogenesis of ocular surface squamous neoplasia (OSSN) or squamous cell carcinoma (SCC)

Results

Results show OSSN in our setting:

- Presents in younger patients
- Short duration of growth of the cancer
- Aggressive nature disease and treatment

Conclusions

Diseases and social behavioural patterns which may result in head and neck defects or facial disfigurement are on the increase, and are affecting a younger patient cohort.

EFFECT OF BRUSHING ON THE SURFACE ROUGHNESS OF 3D-PRINTED AND MILLED DENTURE BASE RESINS

Yoshinori Yamamoto, Takeshi Saito, Masahiro Ryu, Takayuki Ueda
Tokyo Dental College, Tokyo, Japan

Research Presentation

Topic: Esthetic Dentistry and Digital Technology

Purpose / Aim

This study aimed to clarify the effect of brushing on the surface roughness of denture base resins fabricated via 3D printing and milling.

Materials & Methods

Herein, 12 specimens each were fabricated via 3 fabrication methods, which included printing (Dima print denture base, Kulzer), milling (Ivotion base, Ivoclar Vivadent), and heat polymerization (Urban, Shofu; conventional method). Four specimens of each method were polished using a silicon carbide abrasive paper up to #1200 under running water to assume the surface roughness of mucosal surface of the denture base. The remaining eight specimens of each method were polished in a similar manner as the mucosal surface specimens and subsequently polished using brushes and a cloth buff wheel to assume the surface roughness of polished surface of the denture base. The mucosal surface specimens were brushed with 50,000 strokes. The polished surface specimens were divided into those brushed with 50,000 and 100,000 strokes. The areal arithmetic mean roughness (Sa) and maximum height (Sz) were measured before and after brushing and compared using paired t-test with α was set at 0.05.

Results

For the mucosal surface specimens, the Sa (before/after brushing) was 0.97±0.10/0.79±0.18, 1.0±0.03/1.2±0.26, and 0.93±0.86/0.58±0.39μm and the Sz was 24.78±4.29/22.55±7.17, 32.28±5.12/31.32±0.29, and 30.26±8.42/18.88±3.57μm for the printing, milling, and conventional methods, respectively. There were significant differences in the Sa of printing and conventional method between before and after brushing. There was a significant difference in the Sz of conventional method. Moreover, for the polished surface specimens brushed with 50,000 strokes, the Sa was 0.23±0.02/0.12±0.04, 0.21±0.02/0.19±0.03, and 0.14±0.01/0.12±0.01μm for the printing, milling, and conventional method, respectively. There was a significant difference in the Sa of printing. Furthermore, for the specimens brushed with 100,000 strokes, the Sa was 0.17±0.03/0.11±0.01, 0.20±0.01/0.23±0.06, and 0.21±0.05/0.11±0.02μm for printing, milling, and conventional method, respectively. There were significant differences in the Sa of printing and conventional method between before and after brushing. However, the Sz showed no significant differences in the polished surface specimens brushed with 50,000 and 100,000 strokes.

Conclusions

The findings indicate that brushing does not increase the surface roughness of denture bases fabricated via printing and milling.

Funding: JSPS KAKENHI Grant Number 21K10011

Keywords

CAD/CAM technology, 3D printed dentures, denture cleaning

COMPARISON OF DEFORMATION BETWEEN MONOLAYER ZIRCONIA AND MULTILAYER ZIRCONIA AFTER SINTERING

Donghwi Yook, Seoung-Jin Hong, Janghyun Paek, Kwantae Noh, Hyeong-Seob Kim, Kung-Rock Kwon, Ahran Pae
Department of Prosthodontics, Kyung Hee University College of Dentistry, Kyung Hee university Medical Center, Seoul, Republic of Korea

Research Presentation

Topic: Fixed Prosthodontics

Purpose / Aim

In this study, the degree of distortion during sintering of monolayer zirconia with the same composition and multilayer zirconia with various compositions was analyzed to find out the range of use of multilayer zirconia in clinic.

Materials & Methods

3 units, 4 units and 6 units zirconia fixed prosthesis were designed using ExoCAD. Monolayer block (company D), multilayer block 1 (company D), multilayer block 2 (company D), multilayer block 3 (company U), multilayer block 4 (company DM), Each block was milled and manufactured. A crown made of a monolayer block (company D) was set as the reference data, and the crown made of four different multilayer blocks was used as the measured data and superimposed with the best fit algorithm based on the anterior abutment using Geomagic (3D systems, Morrisville, NC, USA). Shrinkage distortion during sintering of 4 types of multilayer blocks (multilayer block 1 (company D), multilayer block 2 (company D), multilayer block 3 (company U), multilayer block 4 (company DM)) was measured using the difference in distance from the distal cusp of the abutment.

Results

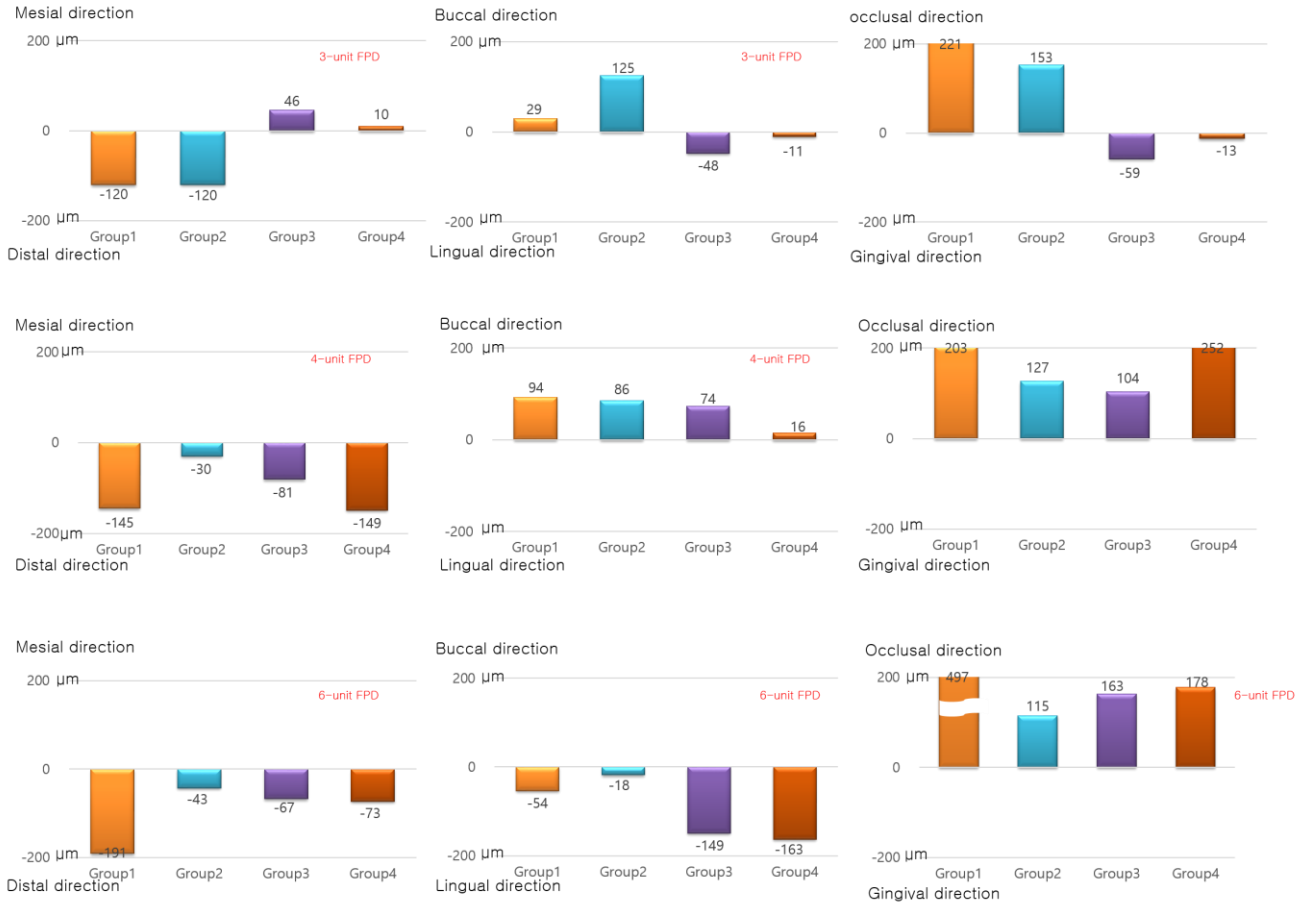
When comparing monolayer blocks and multilayer blocks, there was no significant difference between multilayer blocks and general blocks except for multilayer block 1 (Group1) up to 3 units. However, in the 4 unit and 6 unit, the multilayer group showed a relatively higher value than the general block.

Conclusions

Multilayer zirconia has no significant difference from monolayer zirconia up to 3 units, and it is recommended by the manufacturer that it can be used clinically. In order to use multilayer zirconia in a long span of more than 4 units, additional research on the composition of the multilayer block seems to be required. In order to minimize distortion during sintering, additional research on the sintering process seems to be necessary.

Keywords

zirconia, sintering, distortion, Geomagic, multilayer zirconia, ExoCAD



(C) mesiodistal distance (D) buccolingual distance (E) occlusal distance

MANAGEMENT OF A FRACTURED IMPLANT-SUPPORTED PROVISIONAL BRIDGE: A CASE REPORT

Majid Zakeri, David Chvartszaid
University of Toronto, Toronto, Canada

Case Presentation

Topic: Implant Prosthodontics

Purpose / Aim

To manage a major technical complication of a provisional all-acrylic implant-supported fixed dental prosthesis.

Materials & Methods

A 70-year-old female came to Graduate Prosthodontics clinic in an emergency basis with chief complain of fractured provisional all-acrylic implant-supported fixed dental prosthesis, IS-FDP. Clinical examination revealed a through and through fracture in vicinity of prosthetic screw channel of site 13. Prosthesis was stable in place, and clinical examination did not reveal any biologic complications around Maxillary implants. Patient did not report discomfort before and following fracture of the prosthesis. Provisional all-acrylic IS-FDP was removed; prosthetic components were assessed and revealed intact. Following discussion of the treatment with the patient and communication with the lab, provisional all-acrylic IS-FDP was removed, and healing caps were inserted on MUAs. A transitional complete denture was relined using COE-Soft (GC) and delivered to the patient. Repair process discussed thoroughly with the lab to ensure a mutual understanding of the case. Reinforcement of the prosthesis with metal wire was considered to manage the technical complication.

Results

Provisional all-acrylic IS-FDP reinforced with metal wire was re-inserted. Occlusion, speech, and patient's comfort assessed to ensure optimal function of the prosthesis. 2-, 4-, and 8-week follow-ups revealed no complications. Definitive patient treatment (full mouth rehabilitation) is continuing.

Conclusions

Technical complications of provisional implant-supported fixed dental prostheses may manifest as acrylic prosthesis fracture. The value of thorough clinical assessment in such cases is emphasized. Deep understanding and addressing the main causes of such technical complications is necessary for future care. Dx wax-up can be an additional tool for this aim. Thorough communication with lab is crucial to ensure mutual understanding of the case.

Keywords

major technical complication - implant-supported fixed dental prosthesis - metal reinforcement

www.icp-conference.com

CONFERENCE ADMINISTRATION:
RES Seminars

4425 Cass Street, Suite A
San Diego, CA 92109 USA
E-mail: ICP@res-inc.com
Tel: 1 858 270-1814
Fax: 1 858 272-7687

Join Us in Shanghai–www.icp-conference.com/registration-shanghai

SHANGHAI, CHINA
OCTOBER 14-17, 2023

International College
of Prosthodontists