NextGen Esthetics
A Global Outreach

11th Annual Conference of the Society for Color and Appearance in Dentistry (SCAD)

September 13-14, 2019
Hyatt Newport Beach Hotel, CA

PROGRAM BOOK

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clinical relevance for researchers & scientific relevance for clinicians

SCAD

Society for Color and Appearance in Dentistry

11th Annual Conference • Hyatt Newport Beach Hotel, CA, Sep tember 13-14, 2019

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Recommended Attire

Welcoming reception and educational sessions: Business casual

President's Dinner: Black tie optional

Event Venues

Welcome Reception (Thu): Garden

Scientific Program (Fri, Sat): Plaza I & II

Poster Session (Fri): Plaza III

Breakfast (Fri, Sat: Plaza Arbor

Lunch (Fri): Plaza Arbor

President's Dinner (Fri, 7:00 – 10 pm): Plaza I & II

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A Message from the President

Dear Colleagues,

The Executive Board of the Society for Color and Appearance in Dentistry (SCAD) cordially welcomes you to our 11th Annual Conference.

The meeting features high-quality, evidence-based information on color and esthetic dentistry, presented by many of the leaders in this field (up to 16 CE hours).

Our poster session will be an additional valuable source of evidence-based information. We will announce the 2019 recipients of SCAD Poster Awards and Larsen-Chu Award for Excellence in Dental Technology, at the meeting.

We look forward to sharing the information and passion with you!

Aki Yoshida, RDT
President, SCAD

Program

Thursday, September 12, 2019

6:00-7:30	*SCAD Executive Board Meeting*
7:30-9:00	*Welcoming Reception*

Friday, September 13, 2019

7:00-8:00	*Breakfast with new members*
8:00-8:15	Opening Ceremony
8:15-8:55	Stephen J. Chu: ***A Paradigm Shift in Implant Design: The Macro Hybrid Concept***
9:00-9:40	John Sorensen: ***The Pursuit of Zirconia Esthetics: Innovations in Zirconia Structure, Design, Translucency and Shade Gradation***
9:40-10:20	*Break, CDT competition*
10:20-10:50	Neimar Sartori: ***Esthetic and Functional Adhesive Rehabilitation of the Worn Dentition***
10:55-11:25	Michael Tsao: ***Anterior Aesthetics Management for Single-Visit Chairside Restorations***
11:30-12:00	Stephanie Zeller: ***The Art of Creation: The Bold Acts of Creating Something New***
12:00-12:45	*Lunch; Lunch & Learn (OMNICHROMA – A Color-Technology Revolution in Composite Dentistry – no fee, but requires separate registration)*
12:45-1:15	*Poster Session*
1:15-1:45	Giacomo Fabbri: ***The Monolithic Prospective in Restorative Dentistry: How this Approach can Face with Color and Natural Appearance***
1:50-2:20	Nobu Kitahara: ***Current Concept of Adhesive Esthetic Restorative Dentistry***
2:25-2:55	Adam J. Mieleszko: ***Monolithic Beauty: Myth or Reality? Recommendations and Limitations for Anterior Restorations***

Friday, September 13, 2019

2:55-3:30	*Break, poster viewing*
3:30-4:00	Laurence Rifkin: ***Macro and Micro Aesthetics Face to Finesses***
4:05-4:50	Alessandro Pozzi: ***10 Years of Zirconia-Based Esthetic Solutions for Complete Arch Guided Implant Restorations***
4:50-5:00	*SCAD Open Meeting*
7:00-10:00	*President's Dinner & Award Ceremony*

Saturday, September 14, 2019

7:00-8:00	*Breakfast*
8:00-8:55	Jon Yoshimura & Naoki Hayashi: ***The Link: Dentist-Patient-Technician***
9:00-9:40	Federico Ferraris: ***Texture and Translucency: Clinical Protocols - Two Key Factors in Esthetic Dentistry***
9:45-10:15	Dubravka Knezovic Zlataric: ***Predictable Color Management in Different Esthetic Dental Treatments***
10:20-10:50	German Gallucci: ***The Shape of Color in Prosthetic Rehabilitations***
10:50-11:30	*Break*
11:30-12:10	Wael Att: ***Digital Workflow in Reconstructive Dentistry***
12:15-1:15	Edward A. McLaren & Diego Michel: ***Creating Natural Contours, Texture, Luster and Surface Color in Dental Restorations***
	Closing Ceremony

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SCAD Mission and Goals

The Society for Color and Appearance in Dentistry (SCAD) was founded in 2008 as a consortium of dental professionals and other experts interested in this area of aesthetic dentistry specifically related to scientific investigation and application of color and appearance in dentistry.

The SCAD goals are as follows:

- To serve as a uniting force in the profession by promoting and fostering greater awareness for color and appearance;
- To advance multidisciplinary collaboration and discovery among industrial and institutional researchers, clinicians, laboratory technicians and others with an interest in color and appearance in dentistry;
- To create and implement educational and training programs on color and appearance for dental professionals and students;
- To promote dental health for the general public through the advanced art and science of color and appearance in dentistry.

SCAD Governance

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Aki Yoshida
William M Johnston
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Andrey Akulovich, Russia
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Federico Ferraris & Christian Stappert, Europe
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Esam Tashkandi, Africa & Middle East

Poster Session and Awards

Poster Session is a very important segment of our program. SCAD has established the Award for the best posters in clinical and research category, related to color and appearance in esthetic dentistry. US/international applicants were eligible for the awards. Each recipient will receive a $1,500 stipend at the annual meeting.

We also invite you to submit an abstract for consideration for poster presentation at the SCAD 2020 Annual Conference (Newport Beach, CA, September 25-26). The instructions will be provided at the SCAD website (www.scadent.org).

Dental Technician Awards

SCAD is conducting the 2019 "Larsen-Chu Award" competition for excellence in dental technology.

The competition is open to dental technicians with less than 10 years in practice, in domestic and international category.

All winners will be presented at the 2019 SCAD President's Dinner during the annual meeting.

Also kindly consider participation in the 2020 CDT competition.

See www.scadent.org for additional information.

Aki Yoshida RDT, Chair of the 2018 CDT Award Committee presents the awards to Virtuoso Award winner Ryo Funaki (left) and Larsen-Chu Award winner Youngbae Kim (right).

SCAD Members and Past Presidents

Past Presidents
Newton Fahl (2016-2018)
Dan Nathanson (2014-2016)
Edward J. Swift (2012-2014)
Stephen J. Chu (2010-2012)
Rade D. Paravina (2008-2010)

Fellows
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Dan Nathanson
Joe C. Ontiveros
Rade D. Paravina
John M. Powers
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New Fellows, 2019
Diana Dudea
Nour Habib
Herbert Scheller

Active Members
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Stephen J. Chu, DMD, MSD, CDT

Dr. Chu is an Adjunct Clinical Professor at New York University College of Dentistry in the departments of periodontology, implant dentistry, and prosthodontics. He maintains a private practice in fixed prosthodontics, esthetic, and implant dentistry in New York City. He has contributed over 80 publications in the dental literature and has given lectures nationally and internationally on the subjects of esthetic, restorative, and implant dentistry. He is the Executive Editor of Compendium and is the recipient of several awards from professional dental organizations.

Oral Presentations

Friday, September 13
8:15-8:55

A Paradigm Shift in Implant Design: The Macro Hybrid Concept

Stephen J. Chu, DMD, MSD, CDT

Lecture Description
Immediate tooth replacement therapy has become a mainstream treatment modality for single tooth implants in the esthetic zone. The advent of subcrestal angle correction [SAC] or co-axis implants has allowed clinicians greater ease of implant placement with an incisal drilling protocol that engages maximum apical-palatal bone yet offering definitive screw-retained restorations. However, the esthetic risks of ITRT include diminished labial bone plate thickness as well as loss of adjacent interdental papilla. An inventive macro hybrid design concept that combines strategies in implant diameter and shape will be discussed. This novel implant system [inverse body taper design] will address the aforementioned esthetic liabilities and biologic clinical needs of anterior extraction socket implants in combination with SAC. Pre-clinical and clinical prospective research will be presented that scientifically supports, validates, and reinforces the value and application of this novel implant design.

Objectives:
[1] Understand risks associated with immediate tooth replacement therapy;
[2] Understand our angle correction implant designs works;
[3] Understand the benefits of a convergent hybrid implant design to maximize esthetic outcomes.

Oral Presentations

Friday, September 13
9:00-9:40

The Pursuit of Zirconia Esthetics: Innovations in Zirconia Structure, Design, Translucency and Shade Gradation

John A. Sorensen, DMD, PhD, FACP

Lecture Description
Capitalizing on the outstanding physical properties of zirconia, the profession has widely embraced the monolithic concept for ceramic prostheses ranging from single crowns to complete-arch implant supported screw retained prostheses. CAD/CAM systems can produce exquisite posterior occlusal anatomy, exceptional accuracy, standardization, efficiency and simplification of processes. In pursuit of more life-like optical properties, manufacturers have introduced a variety of novel innovations in ceramic structure, milling disk/block structure and shade gradation, shading technologies and unique ultra-thin layering materials. This presentation will survey and critically evaluate currently available strategies for state of the art esthetics in monolithic zirconia.

Objectives:
[1] Underline physical properties of zirconia;
[2] Understand the benefits of CAD/CAM systems;
[3] Compare innovations in ceramic structure, milling disk/block structure and shading technologies.

John A. Sorensen, DMD, PhD, FACP

Dr. Sorensen is Professor, Department of Restorative Dentistry; Director, Biomimetics Biomaterials Biophotonics Biomechanics & Technology Laboratory; Director of Research, Graduate Prosthodontics Program at the University of Washington. The B4T team is actively engaged in materials science investigation, developing new diagnostic and analysis tools, research and development of digital work flows for conventional prosthodontics and implant surgical-prosthodontics and clinical trials. He is a diplomate of the American Board of Prosthodontics. Dr. Sorensen was just awarded the 2018 Clinician-Researcher Award by the American College of Prosthodontists. Dr. Sorensen has published over 85 research articles and chapters as well as over 145 research abstracts.He has given over 150 invited lectures in 34 countries as well as over 300 lectures courses, hands-on programs and patient-treatment classes.

Oral Presentations

Friday, September 13
10:20 - 10:50

Esthetic and Functional Adhesive Rehabilitation of the Worn Dentition

Neimar Sartori, DDS, MS, PhD

Dr. Sartori is an associate professor of clinical dentistry, Division of Restorative Sciences, at the University of Southern California, as well as co-director of the Advanced Program in Advanced Operative and Adhesive Dentistry since 2013. He is the course director for the Operative and Esthetic Dentistry module, as well as Advanced Dental Morphology for Esthetic Restorations and Applied Adhesion Sciences. He also serves as an associate editor of Quintessence of Dental Technology. Dr. Sartori earned his D.D.S. degree in 2005, M.S. and certificate in Operative Dentistry in 2008, and his Ph.D. in Dentistry Biomaterials in 2011 from the Federal University of Santa Catarina, Brazil. He was also a visiting Research Scholar at Case Western Reserve University in 2010 and Herman Ostrow School of Dentistry of USC in 2011. Dr. Sartori has been serving as a reviewer for several journals and published nationally and internationally on esthetic, adhesive, and digital dentistry. His research focuses on dental materials and approaches to prevent bonding degradation of the adhesive interface formed between dental structures and restorative materials over time.

Neimar Sartori, DDS, MS, PhD

Lecture Description
Cutting-edge technology, materials, and techniques have increased treatment options for both single-unit restorations and full-mouth rehabilitation. Understanding the basic principles of function, dental adhesion and esthetic dentistry, as well as indication and limitations of current materials and techniques, allow clinicians to perform treatments with predictable outcomes. The lecture will provide knowledge for selecting restorative techniques, materials, and adhesive strategies to rehabilitate complex cases.

Objectives:

[1] Acquire knowledge on restorative strategies to restore full-mouth worn dentition;
[2] Learn about dental materials selection to restore worn dentition;
[3] Recognize the challenges related to establishing a stable adhesive interface.

Oral Presentations

Friday, September 13
10:55-11:25

Anterior Aesthetics Management for Single-Visit Chairside Restorations

Michael Tsao, DDS

Lecture Description
With the ever-increasing popularity of digital dental workflows, a lot of dental professionals still hesitate to commit further than the intraoral scanner. A major reason for this is that in-office milling carries with it the necessity to directly deal with ceramic selection and anterior aesthetics. In this lecture, Dr. Michael Tsao, the founder of CEREC Asia, will show how a systematic approach to aesthetic management can achieve reliable results.

Objectives:
[1] Material indications by shade selection;
[2] Shade matching for monolithic restorations;
[3] Biomimetic characterization and texture.

Michael Tsao, DDS

Dr. Tsao is the owner of Sweet Space Dental Clinic where his team, including twenty dentists, five dental technicians, operate 15 CEREC Omnicams, 15 MCXL milling units, 2 MCX5 milling units, and 8 ceramic ovens including 3 Speedfires. In addition, the clinic has a Galileos CT and a Orthophos CT that are routinely used in conjunction with SICAT virtual facebow for full mouth rehabilitations. With 10 dental chairs, Sweet Space manages an average of 500 CEREC restorations per month. Over the course of 2018, Dr. Tsao has personally placed over 5000 individual CEREC restorations.

Michael Tsao is also the founder of CEREC Asia Training Center, the only Dentsply Sirona certified training facility in Asia. As a CEREC Beta Tester and the primary lecturer, Michael and his team of dentists are passionate proponents of digital dentistry education. With a primary focus on clinical techniques and hands on workshops, CEREC Asia has had a total attendance of over 1000 dental professionals in 100 sessions held over two years. The source of Dr. Tsao's passion for digital dentistry is the unrelenting thirst for knowledge, and his aspirations for CEREC Asia are very simple: learn, create, and share.

Oral Presentations

Friday, September 13
11:30-12:00

The Art of Creation: The Bold Acts of Creating Something New

Stephanie Zeller, DDS, MS

Lecture Description
It's often been said that dentistry is a blend of art and science. But, how many dentists feel like artists? Do you? What would happen if we re-imagined our artistry, not just in what we form with our hands, but with how we think about our work and interact with our patients? What can we learn from other industries that might help us to re-imagine and re-invigorate our work, our lives, and our creations?

Objectives:
[1] The bold moves of innovators throughout history;
[2] The intersection of creativity with dentistry and other disciplines;
[3] How the beauty of light, color, and form transcend the "skills" of dentistry.

Stephanie Zeller, DDS, MS

Dr. Zeller is an infinitely curious prosthodontist, researcher, writer, speaker, podcaster, and Instagrammer. She currently resides and practices in Seattle, WA and actually loves rain. She is the founder of the group xxdentalcollective, a group of female dentists and specialists, as well as the podcast Dental Outliers, where she interviews industry thought leaders and challengers to the status quo. Her writing includes scientific journals, articles, online forums discussing industry and was recently featured in the book 'Titans of Dentistry'. Her lectures range from prosthodontic principles to guided surgery, digital dentistry, and creativity. She aims to explore, push the envelope, provide a platform for agents of progress and change, and to connect and learn from everyone. Join her and share adventures on Instagram, @stephaniezellerdds.

Oral Presentations

Friday, September 13
1:15-1:45

The Monolithic Prospective in Restorative Dentistry: How this Approach can Face with Color and Natural Appearance

Giacomo Fabbri, DDS

Lecture Description
In the last decades, several types of all-ceramic systems and restorative approaches have been developed in order to satisfy the patients' increasing esthetic demand. Today the challenge was to develop an all-ceramic approach characterized by excellent esthetic and function outcomes with minimal thickness in order to preserve as much as possible tooth structure and therefore the reliability of the prosthetic outcome. In this sense, adhesion coupled with monolithic ceramic restorations and minimal-invasive approaches are the key points to improve the mechanical properties of the restorations, and tooth-like esthetic and functional features. These modern restorative approaches, in many clinical situations, allow to achieve excellent esthetic outcomes saving tooth structure and preserving the soft tissues. The lecture is aiming to describe the potential of the All-Ceramic monolithic reconstruction in the daily practice in the anterior and posterior both in case of teeth and implant supported rehabilitations.

Objectives:
[1] Maximizing the biological / esthetic integration and the reliability of the prosthetic outcomes;
[2] Fell confertable with complete monolithic reconstruction on teeth and implant prosthesis;
[3] Selection and management of the restorative material;
[4] New trends on teeth preparation.

Giacomo Fabbri, DDS

Dr. Fabbri graduated with honours in dentistry and dental prosthodontics at the University of Pavia. He is an active member of the Italian Academy of Prosthetic Dentistry (A.I.O.P), a prestigious scientific Academy in the field of esthetic and prosthetic dentistry. He has published several international articles in peer-reviewed journals and lectured in Italy and abroad on topics related to fixed prosthodontics and implant prosthodontics with specific interest on esthetics, new materials and minimally invasive approach. He works in Ban Mancini Fabbri Specialist Dental Practice, located in Cattolica (Italy), in the field of esthetics and prosthetic rehabilitation on natural teeth and implants.

Nobu Kitahara DDS, PhD

Dr. Nobu Kitahara received his dental degree from Nihon University in 1989. His office called "Team Tokyo Nobu Restorative Dental Office" in Tokyo Japan. He received Ph.D. degree from Showa University and currently he has been appointed as a Visiting Professor at Showa University and Nihon University. He is an Associate member of American Academy of Esthetic Dentistry(AAED).Board member of Society of Japan Clinical Dentistry (SJCD).

Oral Presentations

Friday, September 13
1:50-2:20

Current Concept of Adhesive Esthetic Restorative Dentistry

Nobu Kitahara DDS, PhD

Lecture Description
The purpose of "Esthetic Restorative Dentistry" have three objectives. "Function : smooth easy speech and eating, Structure :firm structure of each tooth and overall dental integrity and Biology :a well balanced relationship between teeth and surrounding periodontal tissues". Esthetic Restorative Dentistry always requires color harmony and form harmony. In addition, important elements are material and adhesion. This lecture will address the "Structure" especially the modern change of dentistry in adhesive dentistry.

Objectives:
[1] Structure;
[2] Dentin Bonding;
[3] Zirconia;
[4] Collar harmony.

Oral Presentations

Friday, September 13
2:25-2:55

Monolithic Beauty: Myth or Reality? Recommendations and Limitations for Anterior Restorations

Adam J. Mieleszko, CDT

Lecture Description:
Monolithic restorations became the new norm in modern day dentistry. Optical and strength properties of materials such as lithium disilicate and zirconia have improved and so did superficial staining ceramic mediums and techniques. Recognizing where the limitations lay is the key factor in material selection for optimal esthetic and restorative result.

Objectives:
[1] Proper shade diagnosis for proper material selection;
[2] Translucensy vs opacity considerations.

Adam J. Mieleszko, CDT

Adam J. Mieleszko, CDT graduated in 1997 from New York City Technical College with a degree in Dental Laboratory Technology. In 2000, he received certification in dental ceramics. Since then he has worked in close collaboration with a leading prosthodontists in the field. Interacting with patients on daily bases mastered his skills in dental aesthetic challenges. Adam coauthored books "Fundamentals of Color, Shade Matching and Communication in Esthetic Dentistry" (Quintessence Publishing, 2004, 2011 '2nd edition), "Color in Dentistry, Clinical Guide to Predictable Esthetics" (Quintessence Publishing 2017) and contributed to numerous clinical and technical articles in industry journals.

Oral Presentations

Friday, September 13
3:30-4:00

Macro and Micro Aesthetics, Face to Finesse

Laurence R. Rifkin, DDS

Lecture Description
Facial aesthetics is a science and an art. Therefore, if we wish to truly create facial beauty and not just cosmetic dentistry or smile makeovers that ignore the soft tissue frame around our teeth, we must consider both the hard and soft tissues that are the elements that our faces are comprised of. Additionally, we must never forget that our treatments must be biologically sound in diagnosis and precision execution. Optimal visual data and technology are keys to these goals.

Objectives:

[1] Dento-facial anatomy and beauty from the artist and dentist perspective;
[2] Building the smile in a "Layered" approach from hard to soft tissues;
[3] Basic understanding of injectables and appropriate usage and techniques in dentistry;
[4] Utilization of the dental operating microscope can aid in the precision of our restorative and surgical treatments both biologically and aesthetically.

Laurence R. Rifkin, DDS

Dr. Laurence R. Rifkin practices dentistry in Beverly Hills, California, with a focus on Dento-Facial Aesthetics and Comprehensive Periodontal-Implant Rehabilitation, Microscopic and. precision dentistry. As an international lecturer, Dr. Rifkin has spoken to numerous dental and cosmetic surgery academies In addition to lecturing, he has also been a faculty member of both USC and UCLA's schools of Dentistry. Dr. Rifkin is a charter member and 2017 President of AMED, The Academy of Microscope Enhanced Dentistry, and member of the American and European Academies of Esthetic Dentistry as well as one of the few dental members of the American Academy of Cosmetic Surgery.

He has published numerous papers in Facial Aesthetics, Cosmetic Dentistry and restorative and implant supported dentistry. As an author, he has also publications in both professional, scientific and public journals and magazines. He is currently on the editorial medical advisory board with New Beauty Magazine.

Finally, Dr. Rifkin is a professional artist and sculptor having been represented by galleries as well as having his works in private collections around the world. His pieces are in Paris, Rio de Janeiro, New York, Santa Fe, and Beverly Hills. His sculptures can be viewed on his sculpture website www.rifkinsculpture.com.

Oral Presentations

Friday, September 13
4:05-4:50

10 Years of Zirconia-Based Esthetic Solutions for Complete Arch Guided Implant Restorations

Alessandro Pozzi, DDS, PhD

Lecture Description
The computer guided implant static and dynamic surgery introduced a novel minimally invasive concept in the treatment of total edentulous and terminal dentition patients, with new perspectives based on bone graftless rehabilitation and low morbidity implant surgery. The challenging interplay with the surrounding gingival framework, often overlooked in the extensive rehabilitation supported by implants, will be highlighted through a step by step clinical protocol to deliver a natural gingival architecture and a direct pink free prosthetic emergence. Different Zirconia based restorative options and protocols will be presented to achieve a natural life-like appearance as well as to optimised the soft tissue integration and esthetics. Moreover the novel DTX digital platform can embed all the diagnostic information obtained from CBCT as well as extra and intra oral optical surface scanning, allowing a novel digital pathway based on facially driven virtual diagnostic waxing, prosthetically driven surgical plan, digitally printed surgical template, and immediate fabrication of implant-supported screw-retained interim restorations.

Objectives:
[1] Understanding the benefits and disadvantages of using digitally guided surgery and prosthetics techniques;
[2] Gain knowledge on the different clinical indication of CAD/CAM template guided implant surgery and x-guide navigation implant surgery;
[3] Feel confidence and being able to differentiate when immediate loading is feasible,

Alessandro Pozzi, DDS, PhD

Alessandro Pozzi has been in practice in Rome, Italy since 1997, and formally trained in the inter-related areas of Orthodontics, Oral surgery and Prosthodontics. Currently he has been entitled by the Italian Ministry of Education and Research as Full Professor in Oral Sciences and he is Adjunct Associate Professor at the Goldstein Center for Esthetics and Implant Dentistry of Augusta University, USA. Researcher and scientist, widely published, he has been carrying on clinical researches on the cutting edges technologies to integrate the digital workflow in the clinical practice. As a researcher, he has been selected to receive the 2013 Judson C. Hickey Scientific Writing Award in the Clinical Report Category. Active member of the Academy of Osseointegration and of the Italian Academy of Esthetic Dentistry. He has been lecturing in the most prestigious congresses and academies since 2010. He holds international training courses on digital implant dentistry and aesthetics in his center for Oral Rehabilitation based in Rome Italy. www.studioalessandropozzi.com

Federico Ferraris, DDS

Dr. Ferarris draduated in Dental School at Genoa University as DDS in 1999.
ADHESTHETICS founder.
EAED (European Academy of Esthetic Dentistry) Active Member since 2006.
AIC (Italian Academy of Conservative) Active Member since 2007. Vice-president from 2016 to 2019. President elect for the biennium 2022-2023.
SCAD (Society for Color and Appearance in Dentistry) Regional Councilor for Europe of for the biennium 2013/14 and 2015/16. Secretary for biennium 2017-2018. President elect for the biennium 2021-2022.
Member of the Editorial Board of IJED (International Journal of Esthetic Dentistry) since 2010.
AARD (American Academy of Restorative Dentistry) Member since 2014.
DSD (Digital Smile Design) Master since 2013.
International speaker at dental congresses and courses in more than thirty Countries.
Other informations: National President of AISO (Italian Association of Dental Students) in 1997-99. Trainer at the Dr. Massironi Prosthodontics Annual Master Course from 2004 to 2018.
Co-author of several Italian and International scientific publications including the book on Prosthodontics "Precision in Dental Esthetics" by D. Massironi, R. Pascetta, and G. Romeo published in 2004.
Active and Founder Member of MSC (Massironi Study Club) from 2007 to 2018.
Active and Founder Member of GICC (Interdisciplinar Gymnasium CAD CAM) from 2007 to 2016. IAED (Italian Academy of Esthetic Dentistry) Active Member since 2011.
IAAD (International Academy for Adhesive Dentistry) Member since 2013.
Dental practice in Alessandria, focusing in Operative Dentistry and Prosthodontics.

Oral Presentations

Saturday, September 14
9:00-9:40

Texture and Translucency: Clinical Protocols - Two Key Factors in Esthetic Dentistry

Federico Ferraris, DDS

Lecture Description:
Morphology is the key point in esthetics and appearance in dentistry, important aspects are also represented by the texture (the morphology of the surface), translucencies and opacities. These elements are definitely important key factors for the final outcome in restorative dentistry. In this lecture it will be shared how to achieve them with the clinical Adhesthetics protocols with composite materials and also the importance to dialogue with the dental technician in order to obtain this kind of dimensions of the tooth. Following specific protocols is absolutely mandatory in order to obtain predictable and stable results.

Objectives:
[1] To reproduce primary, secondary and tertiary anatomy with different materials;
[2] To manage composite materials with different translucencies and/or colours in order to obtain natural halo effect in the incisali third.

Oral Presentations

Saturday, September 14
9:45-10:15

Predictable Color Management in Different Esthetic Dental Treatments

Dubravka Knezovic Zlataric, DDS, MS, PhD

Lecture Description
Color presents one of the most important parameters when it comes to a patient's assessment of the quality of dental treatments. Demands for procedures that restore and improve the patient's appearance increase every day. A great progress has been made recently in digital techniques of shade evaluation, analysis and interpretation of components responsible for dental color. At the same time, advancementin dental materials offer both clinicians and dental technicians various options to achieve the best possible solutions in respect to color. The lecture will present clinical steps to predictable color management in two different esthetic dental treatments - tracking the whitening progress in combined in-office/at-home whitening treatment and systematic approach of color control in fabrication of feldspathic CAD-CAM veneers.

Objectives:
[1] Discussion on the use of digital techniques in clinical shade assessment;
[2] Discussion on the need for implementation of combine in-office/at-home whitening treatment in everyday clinical practice;
[3] Discussion on the indications and use of feldspathic CAD-CAM material to restore the color of maxillary anterior teeth successfully.

Dubravka Knezovic Zlataric, DDS, MS, PhD

Dr. Knezović Zlatarić is Professor of Prosthodontics in the Department of Removable Prosthodontics and Head of Ellective Lecture „Basics of Esthetic Dentistry" at the School of Dental Medicine, University of Zagreb, Croatia, where she gained her clinical certificate in Prosthodontics and completed PhD.

As a member of European Prosthetic Association she was awarded three times - for the best presented scientific study, poster presentation and for the young investigators in the fields of Prosthodontics. In 2007, she was the winner of the second place for outstanding poster presentation at the meeting of the International College of Prosthodontists in Fukuoka, Japan. Professor has been the principle investigator and project manager of several scientific projects financed by Ministry of science and University of Zagreb, Croatia.

Professor's research and clinical focus is on various esthetic dental treatments with emphasis on minimally invasive procedures restoring teeth to their natural appearance.

Oral Presentations

Saturday, September 14
10:20-10:50

The Shape of Color in Prosthetic Rehabilitations

German Gallucci, DMD, PhD

Dr. Gallucci is the Chair of the department of Restorative Dentistry and Biomaterials Sciences at Harvard School of Dental Medicine. He obtained his Doctorate in Dental Medicine at the department of Prosthodontics, School of Dental Medicine at the University of Geneva, Switzerland. Dr. Gallucci actively participates in clinical research related to implant-prosthodontics and Digital Dentistry. His work has been published in International peer reviewed journals and is member of the editorial board for several scientific dental journals. Dr. Gallucci participates as invited lecturer in international and national conferences and congresses. He is fellow of the Academy of Prosthodontics, International Team for Implantology (ITI), Switzerland, and active member of the Academy of Osseointegration (AO) - USA, European Academy of Osseointegration (EAO), Greater New York Academy of Prosthodontics, (GNYAP) and International Academy of Dental Research (IADR).

German Gallucci, DMD, PhD

Lecture Description
This lecture will address the clinical and technical aspects to achieve natural-looking morphology, surface texture and intergrated color matching in anterior dental restorations.Natural dentitionserves as an anatomic atlas to interpret and mimic the orientation and location of dental anatomic structures. Transition angles and ridges, proximal slopes, labial grooves, the cervical, middle, and incisal thirds of the buccal surface, as well as lingual central concavity and lingual transition ridgesshould all be mimicked by the prosthetic work to achieve esthetic integration. The position of buccal transition ridges directly influences the buccal mesio-distal dimension, so-called "visual width". Specific surface texture characteristics reflect light and thus enhance visual dimension of the definitive rehabilitation, and its final esthetic integration.

Objectives:
[1] To understand the factors affecting the final esthetic outcome;
[2] To discuss clincial approaches to esthetically integrate prosthetic restorations;
[3] To asses the anatomical factors enahcing final esthetic results.

Oral Presentations

Friday, September 14
11:30-12:10

Digital Workflow in Reconstructive Dentistry

Wael Att, DMD, PhD

Lecture Description:
The progressive shift towards implementing digitally-driven technology in reconstructive dentistry is obvious. Compared to conventional methods, the ultimate goal of digital technologies is to improve the quality and capabilities in examination, diagnosis, and treatment of the dental patient. It is still questionable, however, whether such digital tools facilitate improved accuracy in data acquisition and assessment, superior efficacy in treatment planning, and more controlled and faster manufacturing process. This presentation will provide an overview about disruptive technologies in dento-facial rehabilitation and discuss different possibilities and advantages when using a conventional or a digital workflow.

Objectives:
[1] To provide an overview about the contemporary digital workflow;
[2] To compare the digital workflow with the conventional approach;
[3] To demonstrate how different digital tools can be combined for the treatment of comprehensive cases.

Wael Att, DMD, PhD

Dr. Att is a Professor and Chairman of the Department of Prosthodontics, Tufts University School of Dental Medicine. He is also a Professor of Prosthodontics at the School of Dentistry, University of Freiburg, Germany. Dr. Att is board-certified prosthodontist from the German Society of Prosthodontics and Biomaterials (DGPro) and an active member of the European Academy of Esthetic Dentistry (EAED). He serves as President of the International Academy for Digital Dental Medicine (IADDM), Past-President of the Prosthodontics Group of the International Association for Dental Research (IADR) as well as President of the Arabian Academy of Esthetic Dentistry (ARAED). Dr. Att obtained his DDS degree in 1997 and received the Dr Med Dent (2003) and PhD (2010) degrees as well as the title of extraordinary professor (2013) from the University of Freiburg. He was a Visiting Assistant Professor from 2005 to 2007 at the Weintraub Center for Reconstructive Biotechnology, UCLA School of Dentistry and the Director of Postgraduate Program in Prosthodontics in Freiburg from 2007 to 2017. Dr. Att's teaching and clinical activities focus on perio-prosthetic rehabilitation of multidisciplinary cases as well as the implementation of digital technologies in reconstructive dentistry.

Oral Presentations

Saturday, September 14
12:15-1:15

Creating Natural Contours, Texture, Luster and Surface Color in Dental Restorations

Edward A. McLaren, DDS, MDC

Diego Michel, DDS, MDC

Dr. McLaren is a Prosthodontist and Master Dental Ceramist. He was founder and first director of the UCLA Post Graduate Esthetic Dentistry and UCLA/LACC Master Dental Ceramist program Dr. McLaren is still actively involved in many areas of prosthodontic and materials research and has authored or co-authored over 90 articles. He is performing ongoing clinical research on various restorative systems. He has presented numerous lectures, hands-on clinics and postgraduate courses on ceramics and esthetics across the nation and internationally.

Dr. Diego Michel Castillo is a Prosthodontist and Associate Professor in Esthetic Dentistry Postgraduate Program and Prosthodontics Postgraduate Program along with Dental Technician Program in Universidad Autónoma de Querétaro. He graduated in December 2018 from the Master Ceramist and Digital Dentistry Continuing Education Program at The University of Alabama at Birmingham under Dr. Edward McLaren(Program director) and MDC Hernán Lázaro Villa (Laboratory director) tuition. He was awarded the third place in the GlaxoSmithKline: National Dentistry Award, 2013. He has lectured about "Simple techniques and equipment to get high end photography" in Costa Rica, Guayaquil, Querétaro and Salt Lake City.

Edward A. McLaren, DDS, MDC & Diego Michel, DDS, MDC

Lecture Description

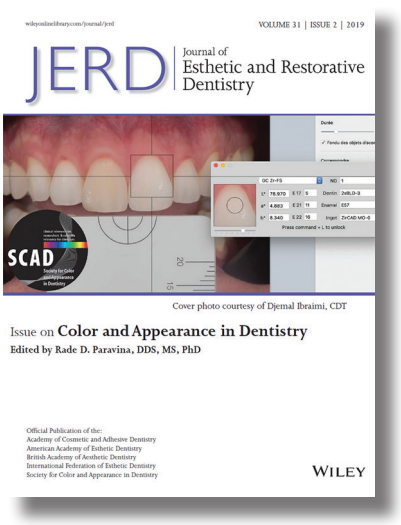
The final touches of contour, texture, surface colorants, and luster can take average looking dental restorations and create an exceptionally esthetic result. These steps are critical to the success of dental restorations weather it is composite or ceramics. These skills are more necessary now than ever as monolithic restorations are now the predominate type of indirect restoration. The lecture will cover the esthetics of the individual tooth i.e. the unique form and texture patterns of Anterior teeth and color distribution patterns that can be somewhat mimicked with surface color. The lecture will detail the very specific armamentaria and techniques to create ideal "Surfaces" both in Color and finish specifically with the newer generation Monolithic Materials Cubic Zirconia and High Strength Glass Ceramics. As a bonus the presentation will cover specific materials and techniques to get Ideal surfaces on Composites, Porcelain, and even in wax as all materials require very different procedures and armamentaria.

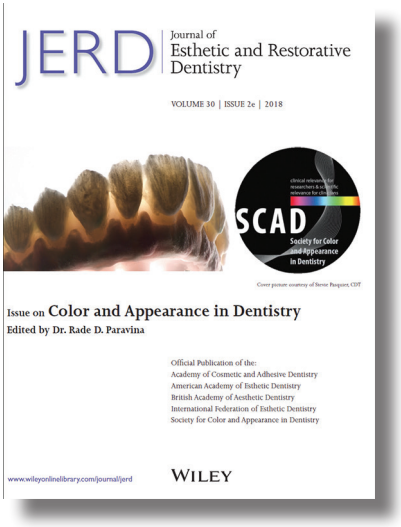
Objectives:

[1] List and explain the final touches that can bring an enhanced esthetic outome to an average looking dental restoration;
[2] Underline the unique form, texture and color distribution patterns of anterior teeth that can be to certain extent mimicked with surface color;
[3] Detail the specific armamentaria and techniques to create ideal "Surfaces" both in Color and finish with the newer generation Monolithic Materials Cubic Zirconia and High Strength Glass Ceramics.

Journal of Esthetic and Restorative Dentistry (JERD) and SCAD

It is our pleasure that Journal of Esthetic and Restorative Dentistry (JERD), the longest standing peer-reviewed journal devoted solely to advancing the knowledge and practice of esthetic dentistry, is our home since 2014. In addition to the International Federation of Esthetic Dentistry (IFED), American Academy of Esthetic Dentistry (AAED) and other prestigious groups, JERD is also the official publication of SCAD, with two issues per year devoted to color and appearance in dentistry. We strive to be the most competitive and most comprehensive resource when it comes to color and appearance in dentistry.





We invite you to keep submitting your manuscripts to us, as we intend to keep the high level established by our parent journal – JERD is the only journal devoted to esthetic dentistry. Our Impact Factor (IF) has experienced a very significant 112% increase in the past five years to 1.72! The JERD is now ranked 41 of 90 journals with IF.

To submit a manuscript, go to https://mc.manuscriptcentral.com/jerd and follow the prompts.

Author Guidelines are available at http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1708-8240/homepage/ForAuthors.html.

We look forward to keep collaborating with you in supporting and promoting the best clinical and laboratory practice and research related to color and appearance.

Abstracts • Poster Presentations

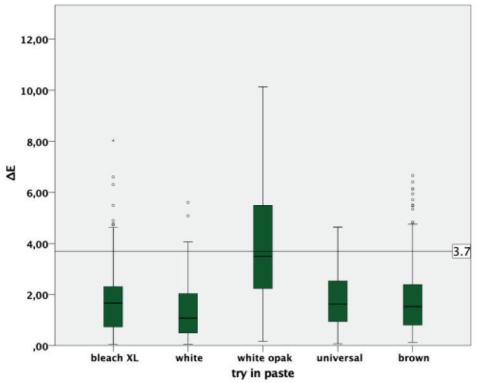
Chairs: Drs. Eldiwany, Gonzalez & Pereira Sanchez

Research Abstract #1

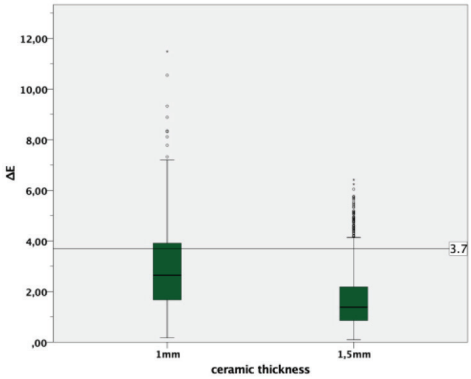
Evaluation of the Color Difference Caused by the Modification of Restoration Thickness, Abutment and Cement Color on VITA ENAMIC®Crowns

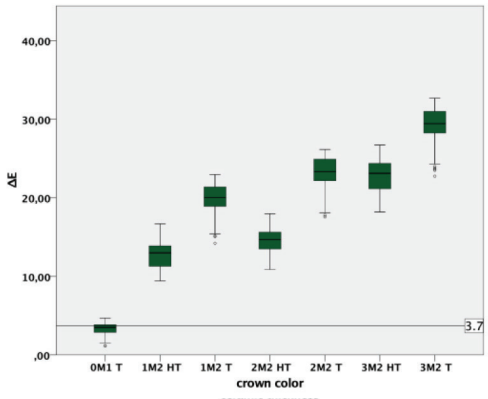
M. Bayadse, L. Diery, C. Igiel, H. Scheller, K.M. Lehmann
Department of Prosthetic Dentistry and Dental Technology, University Medical Center, Mainz, Germany

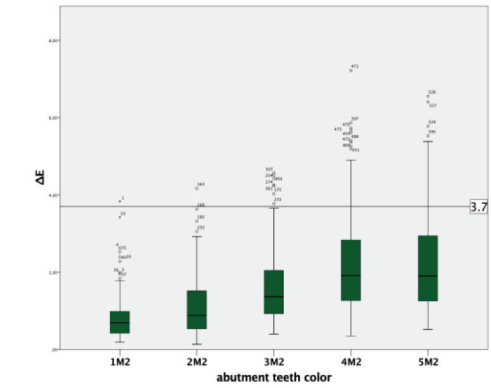
Objectives: In recent years, all-ceramic systems have become increasingly important in dentistry. The desire of patients for cost-effective and high-quality dentures determines the everyday life of modern dental practices. At the same time, the excellent biocompatibility and excellent properties of the low thermal conductivity of dental ceramic systems have proven successful, so that the ceramic materials represent an alternative to conventional materials in dentistry. The aim of this study was the investigation of factors influencing the color realization of a monolithic hybrid ceramic system.
Methods: A total of 120 all-ceramic monolithic crowns (VITA Enamic; VITA Zahnfabrik) were fabricated using a CAD/CAM system. The crowns were divided into three groups of differing ceramic thickness (i.e., 1.0, 1.5, and 2.0-mm) and eight colors (0M1HT, 0M1T, 1M2HT, 1M2T, 2M2HT, 2M2T, 3M3HT, 3M3HT). Each type of crown was seated on six different-colored abutment teeth (1M1, 1M2, 2M2, 3M2, 4M2, 5M2) using six different try-in pastes colors. The color of the resulting restoration was evaluated using spectrophotometry with a spot-measurement device (VITA Easyshade advance 4.0; VITA Zahnfabrik). Color data are expressed in CIE L*a*b* system coordinates, and color difference ΔE relative to the reference tooth were calculated and analyzed using one-way analysis of variance with the Bonferroni post hoc test at $\alpha = 0.05$.
Results:



Abstracts • Poster Presentations







Conclusions: The thickness of the ceramic layer, the cement color, and the color of the abutment tooth significantly affected the color of the resulting CAD/CAM ceramic crown restoration.

Research Abstract #2

Bonding of PEEK for Indirect Restorations

L. Chen, J. Yang, B.I. Suh
Department of Research and Development, Bisco Inc, IL, USA

Objectives: Recently, PEEK material has been used in dental restorations. The purpose of this study is to investigate the effect of various treatments on the bond strengths of PEEK.
Methods: PEEK disc were sandblasted with alumina sand (50 micron), rinsed with water, and dried. Then the discs were treated with different primers or adhesives (Table 1). Shear bond strength was tested using Notched-edge shear bond strength test method (ISO 29022:2013). A resin cement material, Duolink Universal (Bisco), was used to fabricate the posts (2mm-high), and light cured (40sec/500mW/cm^2). The specimens were then stored in water at 37ºC/24hours. The specimens were then tested by Instron tester (crosshead-speed 1mm/min) until failure. Data were converted from kG to MPa (n=5).
Results: Mean (standard deviation) shear bond strengths on PEEK in MPa. Means with different letters are statistically different ($p<0.05$, n=5).
Table 1

Treatment methods	Shear bond strength (standard deviation)
No primer	12.2 (2.8) a
Porcelain Primer (Bisco)	13.4 (2.3) a
ZPrime Plus (Bisco)	20.8 (3.9) b
All-Bond Universal (Bisco)	24.8 (2.4) b

Conclusions: Within the limit of this study, it could be concluded that both ZPrime Plus and All Bond Universal can improve bond strength of PEEK, while Silane (Porcelain Primer) can't improve the bond strength of PEEK.

Abstracts • Poster Presentations

Research Abstract #3

Variation of the Optical Properties of Teeth along the Anatomic Crown

C. Gasparik[1], R. Ghinea[2], M.M. Perez[2], R.D. Paravina[3], D. Dudea[1]

[1] Department of Prosthetic Dentistry and Dental Materials, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania

[2] Department of Optics, University of Granada, Spain

[3] Department of Restorative Dentistry and Prosthodontics, The University of Texas Health Science Center at Houston, USA

Objectives: To analyze the color coordinates, whiteness index, and translucency in three areas of extracted teeth.

Methods: 48 extracted teeth (33 lateral, 15 frontal) were measured with a non-contact spectroradiometer for spectral reflectance (380-780nm, 2nm interval) in three areas (occlusal/incisal, middle, cervical) on the vestibular surfaces. All measurements were performed on black, grey and white backgrounds (illuminating/measuring configuration, bi- flux 45°/0°). CIELAB color coordinates were calculated using CIE D65 standard illuminant, and CIE 2°Standard Observer. Relative translucency parameter (RTP00) and whiteness index for dentistry (WID) were also calculated for each area. Color difference with CIEDE2000 formula, translucency, and whiteness differences were analyzed considering the corresponding 50:50% acceptability and perceptibility thresholds. Kruskal-Wallis and Mann-Whitney U test were used to analyze the data (α=0.05).

Results: Mean values of CIELAB color coordinates and WID on grey background, and mean RTP00 in the three areas were: occlusal/incisal- L*=75.80, a*=1.29, b*=17.54, WID=16.42, RTP00=4.22; middle- L*=77.58, a*=1.31, b*=19.25, WID=15.40, RTP00=2.98; cervical- L*=78.61, a*=1.05, b*=21.91, WID=13.61, RTP00=2.21. Except for a*, all values were significantly different between the areas ($p<0.05$). Frontal teeth were more translucent and with greater differences in translucency between areas. Although they had higher values of lightness, the results were not statistically significant ($p>0.05$). Lateral teeth were more reddish and less yellowish than frontal teeth ($p<0.001$) and had lower WID values, for all the three areas. Color differences calculated between occlusal and cervical were greater for lateral ($\Delta E00=3.84$) than for frontal teeth ($\Delta E00=3.18$). The difference in whiteness between occlusal and cervical was also greater for lateral teeth and was above the acceptability threshold, for both groups..

Conclusions: In general, color and whiteness differences ($\Delta E00$ and ΔWID) and translucency differences, above the respective thresholds were found between the three considered area of both frontal and lateral teeth, as well as between the two groups of teeth.

Research Abstract #4

Effect of Aging on the Color Stability of Stained Monolithic Dental Ceramics

A.W. Habib[1], M.N. Aboushelib[2], A.N. Habib[3]

[1] Department of Biomaterials, Faculty of Dentistry, Cairo University, Egypt, Department of Biomaterials, Faculty of Dentistry, Misr International University (MIU), Egypt

[2]Department of Biomaterials, Faculty of Dentistry, Alexandria University, Egypt

[3]Department of Biomaterials, Faculty of Dentistry, Cairo University, Egypt

Objectives: To study the effect of aging on color stability, translucency and surface roughness of stained different dental ceramics,

Methods: Six different all ceramic substrates (n=10/material) Mark II, Empress CAD, e.max CAD, ZirCAD LT, ZirCAD MT Multi and Suprinity were used. The ceramic materials were stained with either IPS Ivocolor (n=5/material) or Vita Akzent stain (n=5/material). Aging was done according to ISO 6872. Color change (ΔE) and the translucency parameter (TP) were measured by spectrophotometer. The surface roughness (Ra) was evaluated using AFM. All these tests were performed before and after aging. Additionally, 4 zirconia specimens were either stained only or glazed only using IPS Ivocolor or Vita Akzent stain and glaze. Quantitative elemental analysis of the stained and glazed surfaces was done using the EDX. Leached ions due to aging were analyzed by ICP.

Results: Aging had significantly changed the color (ΔE) and decreased the translucency (TP) of all stained ceramics. Mark II and Empress CAD showed the significantly highest ΔE and TP value when stained with IPS Ivocolor, whereas Mark II showed the highest when stained with Vita Akzent stain. ZirCAD LT represented the lowest significant mean ΔE and TP value. The roughness (Ra) value was significantly increased in all specimens. On the other hand, the EDX investigation showed a decrease in the elemental composition of the stained surface. Furthermore, the ICP analysis revealed that most compositional elements of stain and glaze were detected in the aging solution.

Conclusion: Aging had significantly affected the color stability, translucency and surface roughness of the stained monolithic ceramics. The ΔE values were all above the acceptability threshold regardless of the stained used. The underlying type of ceramic affected the degree of color and translucency changes. The degree and percentage of ion leaching due to aging, depends on the composition of the stain and glaze.

Research Abstract #5

Masking Potential of the 1-mm Thick Layer of Opaque Shade over Colored Substrates

N. Pereira Sanchez[1], M. Gonzalez[1], D. Stamenkovic[2], R.D. Paravina[1]

[1] Department of Restorative Dentistry and Prosthodontics, The University of Texas School of Dentistry at Houston, TX, USA

[2] Houston Center for Biomaterials and Biomimetics (HCBB), The University of Texas School of Dentistry at Houston, TX, USA

Objectives: The goal of this study was to calculate masking potential of the 1-mm thick layer of an opaque shade over colored substrates.

Materials and Method: Disk-shaped specimens (n=5), 5-mm in diameter and 2-mm thick were made utilizing high noble alloy (Verity Dental, Jensen, North Heaven, CT); A4 and C4 body composite (Filtek Supreme, 3M, St. Paul, MN); and Pink Opaquer composite (PO, Universal Restorative Pink Opaquer, 3M). Masking potential was evaluated upon adding a 1-mm thick layer of the PO composite. Composite specimens were polymerized according to the manufacturer's instructions and polished for 40 seconds with one-step polisher disks (PoGo, Dentsply, York, PA). Color measurements were performed using a non-contact spectroradiometer (SpectraScan PR-670, Photo Research, Syracuse, NY). The spectral reflection data was converted into units of CIELAB color notation system.

Result: Color differences (ΔE*) among Verity alloy, A4 and C4 substrates versus the Pink Opaque substrate were 42.6, 25.5 and 28.6, respectively. Color differences among the four substrates and the same substrates after adding 1-mm PO shade were 41.2, 25.5 and 28.5 and 1.1, respectively. Corresponding color differences reduction was 89.8%, 92.2% and 91.6% for Verity, A4 and C4 composite as substrates, respectively, averaging 91.2% (1.2). Color of 2-mm thick Pink Opaque substrate did not change much upon adding of 1-mm layer of the same shade. Finally, color differences among Verity, A4 and C4 substrates with 1-mm Pink Opaquer shade and 3-mm thick Pink Opaquer shade were 4.2, 2.0 and 2.4, respectively.

Conclusion: Within the limitations of this study, it was found that Pink Opaquer shade exhibited excellent masking ability. The 2-mm layer of Pink Opaque shade was found to be close to optically infinite thickness.

Abstracts • Poster Presentations

Research Abstract #6

Translucency Variations among Different Shades and Thicknesses of Aesthetic Ceramic Materials

I-S. Pop-Ciutrila[1], D. Dudea[1], H.A. Colosi[1], J. Ruiz-López[2], R. Ghinea[2]

[1] University of Medicine and Pharmacy "Iuliu Hatieganu", Faculty of Dentistry, Cluj-Napoca, Romania

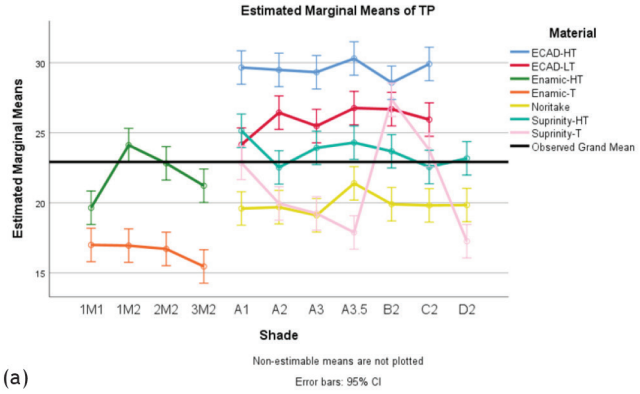
[2] Optics Department, Faculty of Science, University of Granada, Spain

Objectives: To analyze the translucency variations among four different aesthetic ceramic systems with 2 levels of opacities and 2 different thicknesses.

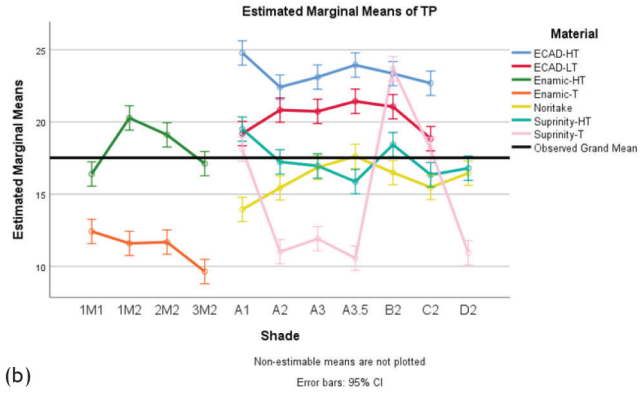
Methods: A large number of shades and all translucency levels of four different aesthetic ceramic systems - IPS-Empress CAD (ECAD, Ivoclar, Vivadent), Noritake Super Porcelain EX-3 (Noritake, Kuraray Noritake Dental), Vita Suprinity and Vita Enamic (Suprinity, Enamic,Vita Zahnfabrik) - were included in this study. Rectangular (14× 12×18mm, n=3) and round (10 mm diameter, n=3) samples with two different thicknesses (0.7mm and 1.25mm, n=3) were fabricated or cut from CAD/CAM blocks with a water-cooled diamond disk in a precision saw machine at low speed, and polished to final thickness on a grinder polisher. Translucency Parameter (TP) of all samples was calculated using the CIE L*a*b* color coordinates (CIE 2º Standard Observer, CIE D65 Illuminant) measured over white and black ceramic backgrounds with a non-contact spectroradiometer (SpectraScan PR-670), a Xe-Arc light source (Oriel, Newport Corporation) and CIE recommended 45°/0° bi-flux illuminating/measuring geometry. The multivariate analysis of variance MANOVA and Tukey post-hoc multiple comparisons tests were used to statistically analyze the variations of TP among the studied materials.

Results: TP of all ceramic materials decreased with increasing thickness (Fig. 1). The highest TP value across all its available shades was found for ECAD-HT, while the lowest was registered for Enamic-T. Highly statistical significant differences ($p<0.001$) in translucency were found between all the 7 types of ceramic materials included in this study, independently of thickness, except between Enamic HT and Suprinity T ($p=0.405$ for 0.7mm thickness). The translucency variations among the different shades of each material are small within the same material but significantly different (($p<0.005$) between materials.

Abstracts • Poster Presentations



(a)



(b)

Fig 1. TP mean values and 95% confidence intervals of 0.7 mm thick (a) and 1.25 mm thick (b) samples of all evaluated ceramic materials in different shades

Conclusions: While shade plays a minor role in the variation of TP, the type of material and thickness of the preparation is expected to significantly affect the translucency of the final restoration.

Grant #, acknowledgments: This work was supported by a grant from Romanian Ministry of Research and innovation, CNCS – UEFISCDI, project number PN-III-P1-1.1-PD-2016-0742, within PNCDI III and PGC2018-101904-A-I00 grant from the Spanish Ministry of Science, Innovation and Universities.

Research Abstract #7

Accuracy and Reproducibility of 4 VITA EasyShade: A Pilot Study

D. Yadav, V. Gala, Y. Whiteman
Center for Esthetic Dentistry, UCLA School of Dentistry, Los Angeles, CA, USA

Objectives: In the last several years a number of intra –oral spectrophotometer devices have been introduced to the market. Numerous studies have compared shade matching accuracy of a single device, as well as comparison between different manufacturers, however, there is limited evidence of accuracy and consistency when comparing a number of devices of the same manufacturer. The purpose of this pilot study is to test the reproducibility and accuracy of 4 VITA EasyShade devices.
Matherial and Methods: 4 natural extracted teeth and 2 VITA classic shade tabs were used to measure shade using 4 VITA EasyShade devices. The samples were mounted on Silicon jigs that were designed to stabilize the sample as well as mark a repeatable position for the probe tip. The teeth were initially visually matched with VITA Classic shade guide and then measured with VITA EasyShade using "Base shade determination mode". The shade tabs were measured only using "Classic shade tab mode" on the devices. The teeth were kept hydrated to maintain the shade, all samples were measured 10 times by each of the four devices, data was collected, and the percentage was calculated.
Results: Of the collected data 151 of 160 readings for the extracted teeth (94.37%) and 76 of 80 readings of the shade tabs (93.75%) were true, with a discrepancy of one shade difference (I.e. A2 TO A3). Consistency measured between 4 devices averaged to 94.16% and ranges from 91.6% to 96.6%.
Conclusions: Although VITA EasyShade devices performed with a high level of accuracy and consistency, some discrepancy was observed, therefore repeating measurements is recommended when taking shade clinically. Additional statistical analysis and clinical studies and considerations are required to evaluate and validate the results.

Research Abstract #8

Color Distribution of Natural Teeth in the Korean Population

H-K. Kim
Department of Prosthodontics, Institute of Oral Health Science, Ajou University School of Medicine, Suwon, Republic of Korea

Objectives: To investigate the distribution of natural tooth shades by age and gender in the Korean population with a spectrophotometer.
Methods: A total of 674 human subjects were recruited and divided into three age groups; young (16-30), middle (31-59), and elderly (60-89). Each group was then subdivided according to gender. Color was measured on the upper central incisor and CIELab color coordinates were obtained. CIEDE2000 color differences (ΔE_{00}) between genders within each age group and between age groups for both genders were calculated. Two-way ANOVA was used to identify the influence of age and gender on each color variable.
Results: The most frequent color in the Korean population was 2L1.5. L* values decreased, while b* values increased with age ($P<.05$). There was a significant interaction between gender and age on b* values; $F(2,668)=3.489$, $P=.031$, partial $\eta^2=.010$, and observed power=.652. Females generally have lighter and less chromatic central incisors compared to males. The ΔE_{00} values between genders in elderly groups were beyond acceptability threshold.

Conclusions: The central incisors were getting darker, more yellowish, and reddish with age. Information on the chromatic range of natural teeth by age and gender could help to select colors for esthetic dental restorations..

Clinical Abstract #9

Shade Matching of Omnichroma vs. 3M Z250 in Class V Restorations. A Case Report

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Shade selection has always been a tiring and time-consuming procedure, especially when preparing anterior composite restorations. It's usually carried out subjectively, with a visual shade guide, under inadequate light conditions; leading to errors in color perception. Composite manufacturers have introduced composites with a color blending potential, that lets them obtain their color from the surrounding tooth structure. This has led to simplifying the shade selection procedure and reducing the amount of needed shades to only one. Tokuyama introduced a single shade composite to further simplify the procedure by eliminating the shade selection step.
Objectives: To evaluate the shade matching ability of Omnichroma compared to a conventional multiple shade micro-hybrid composite in anterior class V restorations.
Methods: A young female patient with multiple anterior Class V carious lesions was recruited for this case report. Shade selection was done preoperatively. Cavities were done using round burs and sharp excavators, under rubber dam isolation. A 1mm bevel was prepared incisally. Teeth 6, 7, and 8 were restored using 3M Z250 micro-hybrid composite of the previously selected shade. Teeth 10, and 11 were restored using Omnichroma. The Patient was recalled after one week for evaluation. Blinded assessors gave the restorations scores for shade matching according to a modified version of "Extended Visual Rating for Appearance Match (EVRSAM)" criteria..
Results: The Evaluation was done under the same lighting conditions with the patient sitting in an upright position. The restorative dentists gave the average scores of (3, 3, 1, 2, 2), the periodontists (1, 1, 0, 1, 1) the patient herself (0, 1, 0, 1, 0) respectively.
Conclusions: Omnichroma was found to give acceptable results regarding shade matching in anterior class V restorations. Notwithstanding, further studies should be made using Omnichroma on a larger sample size and with a wider range of teeth shades.

Abstracts • Poster Presentations

Clinical Abstract #10

Resin-Bonded Fixed Dental Prostheses Technique: The Digital Approach

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Objectives: Use a minimally invasive, esthetic, and reliable technique to fabricate a single-retainer zirconia all- ceramic resin-bonded fixed dental prostheses (RBFDP) for replacement of a maxillary central incisor.
Clinical Consideration: 21-year-old male patient presented with congenitally missing #8 central incisor after completion of orthodontic treatment. The Vita Easyshade V digital spectrophotometer was used for shade determination of the ceramic restoration. Fine-grained diamond burs were used for the preparation of the #9 abutment tooth. A proximal preparation was made parallel to the labial surface of the abutment tooth followed by a light cervical chamfer. A shallow incisal shoulder was made 2-3mm from the incisal edge followed by a pinhole preparation at the tubercle using a ball-shaped diamond bur. All concave tooth structures were slightly roughened with a football-shaped diamond bur to receive bonding material. Abutment tooth preparation was scanned using a CAD/CAM intraoral scanner and sent to a digital laboratory for framework design, milling and finishing of the monolithic translucent zirconia RBFDP. After esthetic and functional evaluation, the restoration was air-particle abraded with 50 µm aluminum oxide particles, followed by application of MDP containing ceramic primer and an adhesive resin system was used for insertion (APC Concept).
Conclusions: The work presented here describes the procedure to restore a high esthetic demand case with a minimal invasive preparation and fabrication of a fixed dental prostheses from a multi-chromatic translucent zirconia material. The APC zirconia-bonding concept is based on decades of research on how to achieve high and long-term durable bond strengths to high-strength ceramics and was paramount to the success of properly cementing the zirconia restoration in this case. Another takeaway from this case is that in the future, an implant is a still a viable option for this patient given that this prosthesis was fabricated using a very minimally invasive approach.

Clinical Abstract #11

Predictable Esthetics Outcome Utilizing Multidisciplinary Approach: A Clinical Case Report

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Objectives: In the world of extreme makeover, patients are demanding final appearance that is not only functional, but also esthetically pleasing. Patient's demands can be predictably met through collaboration of multiple disciplines of dentistry.
Clinical Consideration: A 58 year old female presented to the dental school with a chief complaint that her front tooth, #7, was fractured, and she did not like the appearance of her anterior teeth, especially the crown on #10 that never matched. A CBCT scan, full mouth radiographs, and diagnostic models were done. Consult with the periodontist confirmed that #7 was fractured and non-restorable. After team collaboration, treatment plan options were presented to the patient. Patient was able to ask questions, and agreed to the treatment plan that included extraction of #7 with immediate implant placement, veneers on #8 and #9, and replacement of crown on #10. Patient was also interested in tooth whitening.
Tooth #7 was extracted and immediate placement of Nobel implant was done with healing cap. Patient elected to have an interim partial made, and she opted not to have veneers. During the waiting period for osteointegration, patient bleached using 10% Carbamide Peroxide (Opalescence), and her restorations on the anterior teeth were replaced. 6 months after implant placement, the patient came for evaluation, and placement of the temporary abutment with it's temporary crown to evaluate the emergence profile, and location of marginal gingiva. After confirming adequate esthetics, crown on #10 was removed, preparation was modified and final impression for a screw retained implant crown on #7 and for porcelain crown on #10 was made, temporaries were placed. Final crowns were delivered on #7 and #10.
Conclusions: Restoration of anterior teeth often requires an interdisciplinary team approach. Diagnosing and sequencing of treatment is essential in providing a predictable outcome to the patient.

Abstracts • Poster Presentations

Clinical Abstract #12

Novel Device Helping Patients Evaluate Shade Post-Whitening for Intermittent Maintenance

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Objectives: With the increasing popularity of whitening, periodic maintenance and upkeep are needed to preserve treatment outcome. After whitening teeth shade change over time, a change which varies from patient-to-patient, thus making it difficult to detect and evaluate. A custom-made shade tab included in the maintenance kit can be used as a reference to evaluate shade periodically and help the patient initiate their own maintenance plan, or alternatively be used in office on regular recall appointments.
Clinical Considerations: Rehydration, remineralization and oxygen release are believed to be the reasons for delayed maturation, which is reported to stabilize within 3 to 4 weeks following the whitening procedure. Although fully stabilized, color change is expected due to reversal oxidative-reaction as well as external staining. Additional maintenance procedures are frequently required, especially adjacent to restorations that were fabricated to match the whitened dentition.
A take home custom shade allows the patient to intermittently evaluate their teeth and "touch-up" the whitening when needed until shade match is achieved. The custom shade tab is designed to rest safely against the incisal edges to allow repeatable shade evaluation by the patient.
Conclusion: A novel technique is presented to enable patients and dental professionals to visually evaluate long term tooth shade change after whitening procedures, by including a custom-made shade guide in the maintenance kit.

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Clinical Abstract #13

Approach for Predictably Matching Veneer and Crown in Maxillary Central Incisors: A Digital Technique

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Objectives: Blending the color and translucency of a veneer restoration with an adjacent crown presents many difficulties. To match both restorations in a simple manner, a digital design method involving multilayer monolithic restorations was used in the following clinical case.
Clinical Considerations: A 23 year-old male patient presented with an existing porcelain-layered zirconia crown #9 and a diastema between adjacent maxillary central incisor #8. The patient's complaints were shade mismatch and bulkiness. Initial evaluation with spectrophotometer and enhanced color communication was utilized for proper shade match. An intraoral scanner used to take preliminary impressions and a digital smile design application were employed for treatment planning. Elaboration of a digital wax-up to properly close the diastema and match contours was fabricated to create better symmetry and esthetics. After preparations were completed, an intraoral scan was taken to evaluate tooth reduction, marginal quality and material thickness. A bi-layered restoration was fabricated for tooth #9 with a Zirconia coping and a monolithic porcelain veneer to ensure identical material thickness to the porcelain veneer #8. Marginal adaptation of the zirconia coping was confirmed and an extraoral cementation of veneer to coping was completed. Both restorations were then confirmed for proper seating, contacts and contours and intraorally cemented.
Conclusion: The use of bi-layered, multichromatic translucent materials in combination with optimized design tools provide high esthetic results. Shade match between both restorations is more precise since the veneering multilayer porcelain is milled from the same feldspathic block and the shape of the zirconia coping is symmetric to the adjacent veneer-prepped tooth.

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Clinical Abstract #14

Reproducing Natural Esthetics with VITA Suprinity PC

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[2] Coterc Digital Lab, Belo Horizomte, Brazil

A 38-year old female patient presented with endodontically treated maxillary central incisors (#8,9), extensive composite restorations, post and moderate discoloration on the cervical area. She was unsatisfied with the esthetics and elected full ceramic restorations on teeth 8 and 9 as her final treatment. The clinical challenge was to find a suitable restorative material that would be appropriate in the esthetic zone and would blend in seamlessly with the existing natural dentition. In this case, a zirconia reinforced silicate ceramic (VITA SUPRINITY PC, VITA Zahnfabrik) was selected as the restorative material. The goal was to provide highly-functional esthetic restorations with a natural appearance and pleasing esthetics that the patients is satisfied. VITA SUPRINITY PC restorations with both techniques provided high esthetics results, surpassing the demands of both the patient and the clinical team.

Abstracts • Poster Presentations

Clinical Abstract #15

How White is White?

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[2]Private Practice, TX, USA
[3]Private Practice, Idaho, USA

Objectives: To design and create a natural and esthetically pleasing smile, while following the principles of proper fixed prosthodontics of function and form.
Clinical Considerations: 25 y/o, ASA I Hispanic female presented to the office with a chief complaint of, "I want to have a magazine model smile." The patient inquired about porcelain veneers on anterior teeth (#s 6, 7, 8, 9, 10, & 11).
A comprehensive oral evaluation identified anterior malocclusion with smaller than adequate centrals, laterals and canines, and a skewed gingival architecture. Diagnostic casts, face-bow, esthetic face-bow, and photos were captured. The smile was designed using a diagnostic wax-up, accounting for the space discrepancies. A mock-up from the diagnostic wax-up was made to visually demonstrate the justification for teeth alignment, crown lengthening and an extended veneer coverage to the patient.
The alignment phase of the treatment consisted of Invisalign work-up and aligners for 6 months, where buttons were also utilized. This lead to an expected clinical outcome of 1 mm diastemas between each anterior tooth, warranting the need for future restorations. Measurements and photos were taken and the gingival architecture was corrected with an esthetic flapless crown lengthening on #5, 6, 7 and 8. After gingival healing was achieved, the restoration phase consisting of veneers (#s 6-12) and a full-coverage crown (#5) was undertaken. Provisionals were fabricated from the original diagnostic wax-up. All the final restorations were placed, bonded and appropriately adjusted.
Conclusion: The objectives of proper occlusion and function were adequately met; however, the patient was not completely satisfied with the outcome. She desired "whiter" shades and insisted on replacing all the restorations. It is essentials for clinicians to explore avenues to better educate patients in shade selection and direct expectations.

Clinical Abstract #16

Obtaining Ferrule Effect with a Simple Vacuum-Formed Retainer

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Objectives: One of the most important factors in determining the success of restoring a highly compromised tooth with a fixed partial dental prosthesis is establishing an adequate ferrule effect. Without a ferrule, the prosthesis is likely to fail in a short period of time. When proper ferrule cannot be obtained, crown lengthening or extrusion of the tooth are generally the only optimizing options. This poster will demonstrate a simple and relatively fast technique to extrude a tooth using an Essix retainer.
Methods: A 28-year-old male presented with a maxillary canine lacking sufficient coronal tooth structure. The patient declined to get an implant. Instead, he elected to save his tooth and get it restored with minimal cost and time. Root canal treatment was done followed by a cast post and core. A provisional crown was fabricated with a hook on the labial side. An Essix retainer was fabricated that extended palatal to the canine. A perforation was created in the palatal extension of the retainer for an orthodontic elastic band to wrap around. The retainer was trimmed short on the facial aspect of the canine. The patient was taught to introduce the band through the orifice, loop it and stretch it to engage the labial hook. The provisional crown was trimmed short leaving some space between the crown and the retainer. This space gave the tooth the freedom to be extruded. The patient was instructed to change the bands four times a day and to remove the retainer when eating only. The space between the hook and the Essix retainer was used to assess progress with the extrusion.
Results: This technique required two appointments to ensure the bands proved effective in extruding the tooth. After one month of using the Essix retainer, a desirable ferrule effect with a 2mm gain was achieved. Monitoring of the space between the provisional crown and the retainer confirmed success.
Conclusion: Extruding a tooth using an Essix retainer was more cost effective than regular orthodontics and appealing to both the clinician and the patient. Special attention should be paid to patient's compliance. Neglecting the dentist's instructions could render unpredictable results and lead to a lengthy treatment.

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Clinical Abstract #17

The Beauty of Division—Restoration of a Geminated Maxillary Incisor: A Case Report

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[2]Department of Orthodontics
The University of Texas School of Dentistry at Houston

The incisal edge of a maxillary central incisor tooth in a 29 year old male was fracture as a result of trauma. The tooth remained vital without pulpal exposure. The patient indicated that he wished to keep the geminated appearance to the tooth rather than making it symmetrical to the adjacent central. The tooth was treated using a direct restorative acid-etch composite /putty matrix technique and restored to its original geminated appearance.

Abstracts • Poster Presentations

Clinical Abstract #18

Glass Infiltration of Zirconia Creates a More Predictable Esthetic One Wing Anterior Bridge Especially for the Young Patient." An Implant Alternative?

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NYU College of Dentistry, USA

This poster describes the treatment of a 17-year-old female, who presented with a missing right central incisor. The patient had internal resorption of tooth # 8 and needed it extracted prior to a LeFort Osteotomy as retention of tooth #8 may have compromised the healing. The patient was told she couldn't have an implant placed until she was 25. Treatment options included a provisional removable appliance (flipper), Essix appliance or resin-bonded one wing Zirconia bridge with only slight modification of the left central incisor.

Introduction: The patient was a 17-year-old female. She presented to the Advanced Program for International Dentists in Esthetic Dentistry at New Yok University with the desire to improve her smile by replacing the missing right central incisor.

Medical history Non contributory

Dental history and clinical findings

Previous endodontic treatment #8, orthognathic surgery, orthodontic treatment and #8 extracted.

Problem list: Tooth #8 missing.

Objective: Provide an esthetic replacement for tooth #8 that is similar in size, shape and color to the contralateral tooth.

Methods: An esthetic evaluation of the patient was performed, and diagnostic data was collected. This included a face-bow record, study models and completion of the NYU Esthetic Evaluation Form After assessing the patient's needs, a treatment plan was formulated and presented to the patient and her mother. They elected to proceed with the resin bonded Zirconia cantilevered bridge.

Results: The insertion of a resin boned Zirconia bridge with one wing and a pontic provided the patient with a conservative esthetic result.

Conclusion: The placement of a resin bonded cantilever zirconia bridge with minor tooth modification has the potential of providing a conservative and esthetic long term provisional or possibly an implant alternative. The combination of zirconia and feldspathic porcelain allows the development of shade matching capabilities in conjunction with strength.

Clinical Abstract #19

Prosthetically Guided "Socket Shield" Implant Restoration – Case Report

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[2]Healthy Ones, Private Practice, Samobor, Croatia

Objectives: Socket shield technique has significantly improved esthetic outcome of implant restorations. Integration of prosthetically driven digitally guided surgical and restorative protocols has the potential to further improve esthetic and functional results. The objective is to present a case in which a hybrid digital/analog protocol was used in combination with the socket shield technique in achieving exquisite esthetic and functional results.
Clinical Considerations: A 34-year-old female patient presented with pain and mobility of tooth #13. CBCT imaging confirmed clinical findings of an oblique fracture extending subcrestally from palatal cusp. After obtaining patient's consent, a prosthetically driven digital implant planning with socket shield technique was performed. Intraoral scans (IOS) were used for designing digital wax-up of future restoration. Using the CBCT image, IOS and digital wax-up a surgical guide was designed and 3D printed. Guided implant bed preparation with a root shield in buccal part of the alveolae was preformed. After removal of excess tooth structure, implant was placed through the guide, and the gap augmented using xenogenic bone material. Achieved torque of 45 Ncm was considered adequate for placement of prefabricated provisional crown to protect the shield and support remaining soft tissue. After a period of 6 months an open tray impression with individualized transfer coping was taken to copy the optimal emergence profile obtained by the provisional crown. Using the pretreatment digital wax-up, a screw- retained zirconium oxide (ZrO) restoration was designed on a Ti-base abutment. After try-in the crown was stained and partially glazed to leave polished ZrO surface in contact with soft tissue. The restoration was placed with recommended torque and the screw access hole sealed. Full pink/white esthetic and functional integration was obtained.
Conclusion: Digitally designed and guided implant placement seems to simplify and enhance the socket shield technique for optimization of esthetic and functional treatment outcome.

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Clinical Abstract #20

Efficacy of Light-Activated In-Office Tooth Whitening: Pilot Study

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[2] Department of Restorative Dentistry and Prosthodontics, The University of Texas Health Science Center at Houston, USA

Objectives: Tooth whitening has become one of the most demanded dental procedures in the last past decades. The aim of this prospective clinical study was to analyze color parameters before and after in-office bleaching..

Methods: Color parameters of maxillary right central incisors (CIELAB: L*, a*, b*, ΔE*) of 15 patients were obtained using the Vita Easyshade V intraoral spectrophotometer and converted into CIEDE2000 color coordinates and differences (L', C', h', ΔE'). Measurements were performed immediately before bleaching and seven days after bleaching. The inclusion criteria were as follows: unrestored teeth, no increased tooth sensitivity or internal/external tooth structure anomalies. After the initial professional tooth cleaning all teeth were bleached for 15 minutes using light-activated Philips ZOOM 25% hydrogen peroxide. The in-office bleaching was performed for a total of 60 minutes in 15-minute increments. In between the increments, the gel was removed and replaced times with fresh gel. Means and standard deviations were determined. The data were analyzed by analysis of variance. Fisher's PLSD multiple comparison test was calculated at the 0.05 level of significance. The 50:50 acceptability threshold of $\Delta E_{00} \leq 1.8$ was used in data interpretation.

Results: Teeth became lighter (ΔL'=-10.3±2.1) and less chromatic (ΔC'= 4.1±1.0) after bleaching, while hue changes were minimal (Δh'=0.1±0.9). Fisher's PLSD critical differences for lightness (L') and chroma (C') recorded before- and after bleaching were 1.9 and 1.8, respectively ($p<0.0001$, Power 1.0), while the corresponding difference for hue (h') was 2.0 (n.s.). Color difference (ΔE') between before- and after bleaching was 7.8±1.6, well above the 50:50 acceptability threshold. Correlation between CIELAB and CIEDE2000 color difference, R^2 value and conversion equation are shown in Figure 1.

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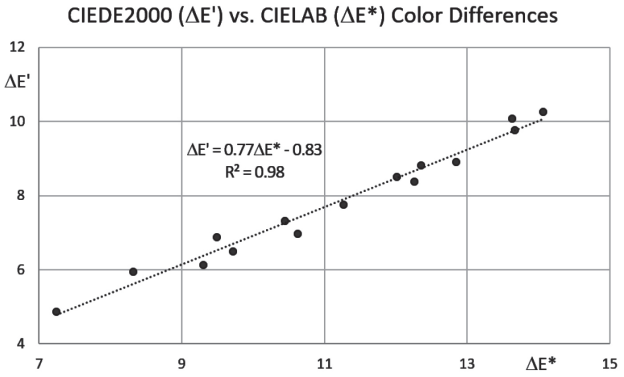
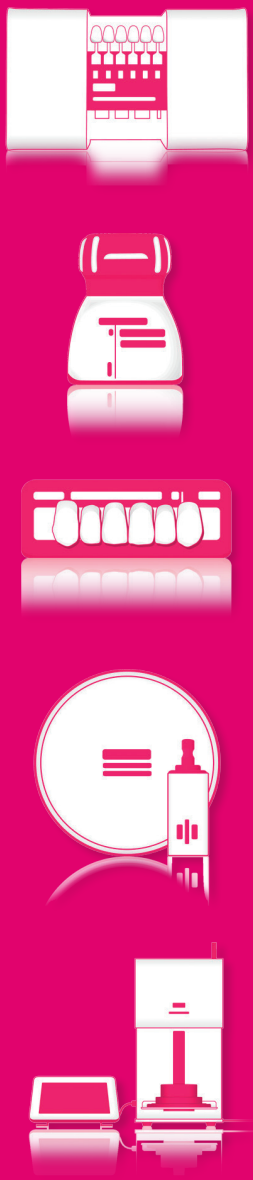


Figure 1.

Conclusion: Within the limitations of this pilot study, it was concluded that the evaluated light-activated in-office bleaching was very effective. The most pronounced changes were in lightness, followed by chroma. CIEDE2000 and CIELAB color differences were highly correlated.

My Perfect Match



VITA – perfect match.

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