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Meeting Abstracts

The proceedings of the 22nd Congress of the Iranian Academy of Periodontology and the 8th International Specialized Symposium: The Future of Periodontology & Implantology

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President's Message

Dear colleagues and delegates,
In today's world, people are always looking for new technologies and knowledge to improve the quality of their lives, and these efforts are evident in all sciences, especially medical and dental sciences.
On the other hand, periodontology and implantology are facing new challenges and opportunities in the 21st century. As the population ages, the demand for oral health care increases, and the expectations of patients and clinicians rise. To meet these challenges and opportunities, we must embrace the advances in science and technology that are transforming our field. These advances include artificial intelligence, personalized medicine, cell and gene therapy, laser therapy, 3D printing, digital science, etc. These important issues are the reason for naming the 22nd Iranian Academy of Periodontology (IAP) Congress "the Future of Periodontology and Implantology."
Artificial intelligence (AI) is the ability of machines to perform tasks that usually require human intelligence, such as learning, reasoning, and decision-making. AI can help improve the diagnosis, prognosis, treatment planning, and outcome evaluation of periodontal and implant diseases. AI can also help analyze dental images, identify risk factors, predict treatment outcomes, and optimize treatment protocols. Cell and gene therapy can help regenerate lost or damaged periodontal and implant tissues. Cell and gene therapy can stimulate stem cells, deliver growth factors, modulate immune responses, and enhance wound healing. Laser therapy can help improve the biocompatibility, osseointegration, stability, and aesthetics of dental implants. It can also reduce inflammation, infection, pain, and bleeding in periodontal diseases. Laser therapy can help decontaminate implant surfaces, stimulate bone formation, enhance soft tissue healing, and modulate bacterial biofilms. Personalized medicine can help optimize the prevention and management of periodontal and implant diseases by taking into account the genetic, environmental, behavioral, and microbiological factors that influence each patient's oral health. It can help select the best implant materials, design the most suitable prosthetic restorations, adjust the most effective treatment regimens, and monitor the most relevant biomarkers for each patient. They can offer new possibilities for improving the oral health and quality of life of patients suffering from periodontal and peri-implant diseases.
I hope this congress's topics have sparked participants' interest and curiosity to learn more about these topics. Reputable international and national scientists will explore them in more depth and detail during the congress.
We are impatiently waiting for your warm and enthusiastic presence at this congress.

Faithfully yours,

Dr. Reza Fekrazad,
Congress President

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Dr. D. Baldi
Drills Free Technologies in Bone Shaping Oral Surgery


Dr. R. Burkhardt
Communication in Periodontal and Implant Practice


Dr. P. Arany
Future of Photo Biomodulation in Periodontics


Dr. L. Ramón
Hard and Soft Tissues Reconstruction of Edentulous Ridges: The Current State of Science and Art


Dr. D. Lops
Esthetics from Surgery of Hard and Soft Tissues to Prosthetic Modern Flows: Part 1


Dr. A. Sculean
New Substitutes for Soft Tissue Grafting


Dr. A. Aoki
Development of Flapless Periodontal Surgery using Er:YAG Laser


Dr. K. Demirel
Guidelines to Implant Treatment with a History of Periodontitis

Further information about congress
For further information please visit: https://iap.ir/conferences/.

Abstract 1

The Autogenous Bone Dilemma: Does it Really Improve the results of GBR?

Dr. Moein Khojaste
Periodontist, Department of Periodontology, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran

Guided bone regeneration (GBR) is frequently used to reconstruct alveolar bone defects before dental implant placement. Autogenous bone is still the gold standard because it provides the three elements required for bone regeneration: osteoconduction, osteoinduction, and osteogenic cells. To simplify the surgical procedure and reduce the need for bone harvesting, GBR with various bone substitutes, alone or in combination with particulate autogenous bone, has been suggested. Despite the tendency to use autogenous bone in composition with bone substitutes, there is controversial evidence regarding the efficacy of using autogenous bone. This study aims to answer the following question: Does adding autogenous bone to bone substitutes enhance the results of guided bone regeneration? To answer this question, a comprehensive search was performed in multiple databases seeking studies that compared the results of adding autogenous bone with those using bone substitutes alone. Most of the studies reported no significant differences between the groups. Although autogenous bone can accelerate new bone formation, it cannot significantly affect the final outcome.

Abstract 2

Sutureless Free Gingival Graft for Vestibuloplasty and Muscle Repositioning

Dr. Mohammad Bakhtiari
Periodontist, Private Practice

Minimally sutured/sutureless FGG for muscle repositioning and increasing lingual and buccal vestibular depths around dental implants. Two of the most challenging and complicated treatments in implant dentistry, especially in patients with strong masticatory muscle attachments, are soft tissue modification and increasing vestibular depth, especially in lingual and posterior buccal aspects. Different challenges are involved, including suturing during treatment, decreased patient intervention on treatment outcomes, and moving muscles apically. Customized acrylic/composite stents will be useful in solving these dental implant challenges. Evaluate the use of DFGG in comparison with SCTG in different root coverage surgical procedures with a focus on histologic findings, postoperative morbidity, clinical outcomes, and late complications.

Abstract 3

Shell Technique: A Summary

Dr. Mostafa Solati
Periodontist, Private Practice

The shell technique is a well-known technique for almost any kind of alveolar ridge augmentation, and it has become more popular in recent years. I will start my presentation by discussing biology and reviewing the literature. I would mention the indications and discuss the details by presenting some cases of autogenous and allogenic shell technique. This presentation could give the audience an overview of the shell technique.

Abstract 4

Guided Bone Regeneration: 30 Years of Lessons

Dr. Vahid Khoshkam
Periodontist, Adjunct Assistant Professor of Clinical Dentistry, University of Southern California

Several treatment modalities have been introduced for reconstructing the alveolar bone. Among them, guided bone regeneration (GBR) is the most documented approach. In this presentation, a therapeutically oriented classification for GBR will be presented. The audience would learn the critical elements for success in GBR, in addition to the current trends in this topic.

Abstract 5

Different Approaches for Soft and Hard Tissue Augmentation around Maxillary Implants with Severe Buccal Bone Resorption

Dr. Seyedhossein Mohseni Salehimonfared
Periodontist, Department of Periodontology, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

After tooth extraction, the alveolar process undergoes dimensional changes. The primary concern is the lack of buccal convexity in the maxilla for implant treatment, especially when dealing with tissue reconstruction in areas with severe bone loss. Rehabilitating maxillary regions with dental implants is a complex task. Effective techniques for bone regeneration include guided bone regeneration, ridge splitting, tent screw insertion, and bone block grafting. To address the buccal aspect deficiency, both soft and hard tissue augmentation methods can be employed, either sequentially or simultaneously. In this lecture, various strategies will be discussed to restore the buccal convexity around maxillary implants in cases of significant buccal bone resorption.

Abstract 6

Peri-implantitis: Diagnosis, Etiology, and Treatment

Dr. Mahdi Kadkhodazadeh
Periodontist, Department of Periodontology, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

The prevalence of peri-implantitis is increasing worldwide, and correct diagnosis and efficient treatment of peri-implantitis are a significant and essential requirement. However, there is much controversy over treatment approaches. In this panel, diagnosis, etiology, non-surgical treatments of peri-implantitis (mechanical debridement and chemical treatment and photodynamic therapy), surgical treatments (regenerative and resective treatments of peri-implantitis), surface decontamination techniques, and implantoplasty will be discussed. Also, soft tissue surgery and its indication will be discussed due to the importance of keratinized tissue around implants.

Abstract 7

Oral/Gut Microbiome and Periodontal Diseases

Dr. Raika Jamali
Digestive Disease Research Institute, Tehran University of Medical Sciences, Tehran, Iran

Oral microbiome is the community of microbes that reside in the oral cavity. The mechanism underlying the translocation of salivary microbes to the gut is a critical element in understanding how periodontitis affects the gut microbiota. Oral dysbiosis occurs when pathobiont expansion occurs with the loss of beneficial microbes and reduced diversity. This condition affects the oral cavity and causes systemic diseases (oral-gut-liver axis). Chronic inflammation, epithelial barrier damage, increased onco-epigenetic alterations, and oncogenic metabolite production are oral cancer pathologic pathways triggered by oral dysbiosis. Beyond the oral cavity, this condition is involved in *Helicobacter pylori*-induced gastric cancer. Periodontal disease (PD) is an inflammatory condition associated with oral dysbiosis. It leads to chronic inflammation of the periodontal tissue, ultimately leading to bone destruction and tooth loss. The economic impact accounts for a significant portion of the annual global economic burden of dental disease. Poor oral hygiene, smoking, and systemic immunocompromised diseases are considered potential risk factors. One proposed mechanism is that periodontal dysbiosis and inflammation lead to the spread of infection from the oral cavity due to transient bacteremia and the immunological injury induced by the effects of circulating oral microbial toxins. Another possible mechanism is that periodontal dysbiosis leads to disturbances and changes to the gut microbiome via oral ingestion of periodontopathic organisms. This theory is supported by the finding that probiotics have beneficial effects in improving clinical parameters and host immune response factors in PD. Periodontitis may induce gut microbiota dysbiosis and intestinal inflammation by translocating salivary microbes. Many studies have shown that swallowed periodontopathic bacteria can pass through the gastric acid barrier and reach the gut. PD is involved in the pathogenesis of metabolic-associated fatty liver disease (MAFLD). It increases the production of potential hepatotoxins, alters the intestinal permeability, and finally leads to enhanced translocation of these hepatotoxins and enteric bacteria into the liver. Animal studies support the idea that oral administration of *Porphyromonas gingivalis*, a typical periodontopathic bacterium, induces inflammation in the liver. Conventional periodontal treatment and

novel microbiome-targeted therapies (probiotics, prebiotics, and bacteriocins) would hold great promise for preventing the onset and progression of MAFLD in patients with PD. In particular, some Lactobacillus spp. have been noted to play a protective role against MAFLD and PD. It is proposed that periodontal treatment may provide a new potential method for treating refractory gut microbiota-associated systemic diseases. PD also has a mutual relationship with metabolic syndrome. Gut microbiota may interact with oral flora and participate in the development of periodontitis. After the onset of hyperglycemia, the oral microbiota had increased levels of *Enterobacteriaceae*, *Aerococcus*, *Enterococcus*, and *Staphylococcus*, which are often associated with periodontitis. Considering the importance of personalized medicine, innovative technologies (next-generation sequencing) enable comprehensive exploration of the oral and gut microbiota in the near future. More effective "microbiota replacement therapy" approaches for treating periodontal diseases are expected to be available soon.

Abstract 8

Challenges of Microbial Resistance and Novel Antimicrobial Treatment Strategies in Periodontology

Dr. Maryam Pourhajibagher
Dental Research Center, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran

Antimicrobial resistance is a significant global public health issue caused by the imprudent use of antibiotics, leading to the emergence of antibiotic-resistant bacteria. The spread of these strains and their resistant determinants could endanger the effectiveness of antibiotics, especially against periodontopathogens. Therefore, there is an urgent need to identify and develop novel strategies to combat antibiotic resistance against pathogenic organisms, especially periodontopathogens. Alternative approaches that might be used against periodontopathogens include probiotics, prebiotics, postbiotics, antimicrobial peptides, bacteriophages, CRISPR-Cas system, antimicrobial photodynamic therapy, and antimicrobial sonodynamic therapy. Probiotics, prebiotics, and postbiotics can help restore the balance of the microbiota in the oral cavity, preventing the growth of pathogenic bacteria. Antimicrobial peptides can help prevent the growth of pathogenic bacteria by disrupting their cell membranes. Bacteriophage therapy involves using bacteriophages to treat bacterial infections, and the CRISPR-Cas system is a genome editing tool that can be used to target and eliminate specific bacterial strains. Antimicrobial photodynamic therapy and antimicrobial sonodynamic therapy involve using light and ultrasound, respectively, to generate reactive oxygen species that can kill bacteria. These approaches have shown promise in treating periodontopathogens, but further research is needed to determine their safety and efficacy in humans.

Abstract 9

Personalized Dentistry: The Future of Treatment

Dr. Maryam Eslami
MD, PhD of Genetics, Fellowship of Regenerative Medicine from Harvard Medical School, Dean of International Facu, Applied Biotechnology Research Center, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Precision medicine (PM) is personalized medicine that can develop targeted medical therapies for the individual patient, in which "omics" sciences lead to an integration of data that leads to highly predictive models of the functioning individual biological systems. They enable rapid diagnosis, assessment of disease dynamics, identification of targeted treatment protocols, and reduction of costs and psychological stress. "Precision dentistry" (DP) is a promising application that needs further investigation; this paper aims to give physicians an overview of the knowledge they need to enhance treatment planning and patient response to therapy. A systematic literature review was conducted in the PubMed, Scopus, and Web of Science databases by analyzing the articles examining the role of precision medicine in dentistry. PM aims to shed light on cancer prevention strategies by identifying risk factors and malformations such as orofacial clefts. Another application is pain management by repurposing drugs created for other diseases to target biochemical mechanisms. The significant heritability of traits regulating bacterial colonization and local inflammatory responses is another result of genomic research and is useful for DP in the field of caries and periodontitis. This approach may also be useful in orthodontics and regenerative dentistry. The possibility of creating an international network of databases will lead to the diagnosis, prediction, and prevention of disease outbreaks, providing significant economic savings for the world's healthcare systems.

Abstract 10

Biomimetic Dentistry and Deep Marginal Elevation from Periodontal Aspect

Dr. Omid Mashouf
Periodontist, Private practice

Microsurgical soft tissue grafting around teeth is a specialized dental procedure aimed at restoring and enhancing the tissue surrounding a tooth. This abstract provides an overview of the technique, its indications, benefits, and outcomes. The procedure involves precisely manipulating soft tissue using microsurgical instruments and magnification devices. It is typically performed by periodontists or oral surgeons with advanced training in microsurgery. The goal is to correct gingival recession, improve aesthetics, and provide a stable foundation for the tooth. Indications for microsurgical soft tissue grafting include gingival recession, which can result from periodontal disease, aggressive tooth brushing, or anatomical factors. Recession can lead to tooth sensitivity, root exposure, and compromised aesthetics. The procedure is also indicated for patients with thin or inadequate soft tissue thickness, which can affect the success of dental implant placement. Microsurgical techniques allow precise and minimally invasive tissue manipulation, reducing postoperative discomfort and faster healing. The grafting procedure can restore the natural contour of the gum tissue, cover exposed tooth roots, and create a harmonious smile. In conclusion, microsurgical soft tissue grafting around the tooth is a valuable technique in periodontal and implant dentistry. It offers precise and minimally invasive tissue manipulation, improving aesthetics, reducing postoperative discomfort, and providing long-term stability. Further research and advancements in microsurgical techniques are expected to enhance the outcomes of this procedure in the future.

Abstract 11

Mechanism of the Effect of Femtosecond Lasers on Hard and Soft Tissues in Dentistry

Dr. Abbas Majdabadi
Department of Laser Research Center of Dentistry, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran

In the last ten years, lasers have significantly replaced mechanical equipment and tools (drills) in dentistry. Lasers are used to remove the excess tissues with the least thermal damage and pain. In the first step, pulsed lasers were used instead of continuous lasers to achieve this goal. Regardless of the many advantages of this method, these lasers have not been able to achieve the ultimate goal of specialists in this field. For this reason, the next step is replacing ultra-short (femtosecond) lasers with traditional pulsed lasers and other advanced electronic equipment. It will not be far from the expectation that in the coming years, part of the dental surgical equipment will be replaced with femtosecond surgical lasers. Laser interaction with ultra-short pulses with different tooth tissues, such as dentin, enamel, soft tissues, tooth decay, etc., has attracted significant attention, which is the result of the special features of this type of laser. It ensures that a limited slowness can be created in a short space and time. Basically, ultra-short lasers have many advantages, including Making precise cuts in hard and soft tissues Maximum reduction of thermal damage in healthy tissues Lack of dependence on tissue absorption coefficient on laser wave form Medical laser specialists should consider that the lasers mentioned above have a new treatment method and protocol compared to traditional surgical lasers. For this purpose, familiarity with the mechanism of creating femtosecond lasers and how they interact with the tissue is an important feature. In this article, while enumerating technical points, effective parameters for surgical procedures will be mentioned.

Abstract 12

Photonic-based Treatments in the Management of Peri-implantitis

Dr. Neda Hakimiha
DDS, PhD, Laser Application in Medical Sciences Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Peri-implantitis is an infectious disease around an osseointegrated implant, which can proceed as an inflammatory process in soft tissues, leading to bone loss. The management of peri-implantitis consists of controlling infection, detoxifying the implant surface, and regenerating bone. This article reviewed the latest photonic-based treatments, including high-power lasers, photobiomodulation, and photodynamic therapy in managing peri-implantitis. Related articles focusing on the use of high-power lasers, photobiomodulation,

and photodynamic therapy in the management of peri-implantitis were searched on PubMed, ScienceDirect, and Scopus. Then, the data were extracted from the articles meeting inclusion and exclusion criteria. The results showed the efficacy of Erbium lasers in detoxifying implant surfaces. Photodynamic therapy with different photosensitizers and light sources showed promising results in reducing microbial counts and improving peri-implantitis indexes. Moreover, photobiomodulation therapy can be used as an adjunctive approach to accelerate bone regeneration. This study showed promising outcomes of photonic-based treatments in managing peri-implantitis. However, inconsistencies in light parameters and dosimetry highlight the need for more well-designed studies to reach a definite conclusion.

Abstract 13

Vertical Bone Augmentation: The Sky Is the Limit

Dr. Amin Motamedi
Periodontist, Private practice

Guided bone regeneration has become more predictable due to a better understanding of biology and advances in surgical techniques and material sciences. Nevertheless, vertical ridge augmentation remains a potential challenge for most clinicians. Most studies have shown an average of 4 mm in vertical augmentation, which is not much, and a %74 average complication rate, which is too much. This presentation shows the possibility of achieving more than 4 mm of new vertical bone regeneration with a near-zero complication rate. There are two reasons. The first is technical reasons. It means the augmentation technique, bone substitute materials, type of membrane, and clinical experience, skills, and expertise directly affect our results as the surgery becomes more complicated. The second reason is biological limitations. The critical question is: What are the biological and technical principles by which we can achieve these results?

Abstract 14

Biomimetic Dentistry and Deep Marginal Elevation from a Periodontal Aspect

Dr. Mojtaba Bayani
Periodontist, Department of Periodontology, School of Dentistry, Arak University of Medical Sciences, Arak, Iran

Clinical dentistry is now focused on conservatism, where minimally invasive procedures are used in various situations. Deep margin elevation (DME), or coronal margin relocation (CMR), is used to raise or reposition subgingival margins into supragingival margins using several materials to increase marginal integrity and bonding strength. Dietschi and Spreafico proposed DME in 1998 to address the multiple clinical problems associated with subgingival margins. To restore deep proximal lesions with minimal effort, it is recommended that an additional amount of composite resin should be applied over the cervical margin and moved it coronally. DME can potentially be an alternative technique for crown lengthening procedures that may come with anatomic complications, such as proximity to root concavities, furcation area, attachment loss, etc. DME provides several advantages, such as less chair-side time, higher quality, more convenient isolation with a rubber dam, and maintaining dry conditions during the whole adhesive fixation of indirect restoration. However, it is not a complete replacement for the CL procedure. In general, DME can be applied when the remaining healthy tooth structure is located higher than the connective tissue compartment of the biologic width area. This lecture aims to explore the literature for scientific evidence on the effects of DML on various materials and evaluate its interaction with healthy periodontium.

Abstract 15

Advantages of Using Deep Margin Elevation in Complex Restorations

Dr. Keyvan Saati
Restodontist, Department of Operative, School of Dentistry, Azad University of Medical Sciences, Tehran, Iran

A conservative approach for restoring deep proximal lesions is to apply an increment of composite resin over the preexisting cervical margin to relocate it coronally, referred to as “deep margin elevation” (DME). Indirect restorations are preferable since they provide better esthetic and anatomic form, physical and mechanical properties, and reduced polymerization shrinkage due to their extraoral fabrication that permits the relief of residual stresses. Subgingival margins are challenging to handle due to limited access, rubber dam slipping over the margin, and subsequent persistent saliva, crevice fluid, and blood leakage. The conventional approach includes orthodontic extrusion and surgical exposure of the cervical margin for proper access to the subgingival

margins and obtaining biologic width, which sometimes leads to more tissue loss or creates an inappropriate root-crown ratio and always delays the final restoration. DME is a conservative method that replaces conventional methods, providing the possibility of isolation, impression, and cementation in indirect restorations. DME in direct restorations allows the creation of a suitable proximal emergence profile and the possibility of properly placing the matrix strip. However, three important points should be considered: the capability of field isolation the perfect seal of the cervical margin provided by the matrix no invasion of the connective compartment of BW.

Abstract 16

Prosthetic Concepts in the Preservation of Crestal Bone: Hybrid Cemented-Screw Type Restorations

Dr. Sasan Rasaeipour
Prosthodontist, Private Practice

Peri-implantitis and crestal bone loss have been recently reported as two significant complications of implants. They occasionally stem from inappropriate prosthetic treatments in both cemented and conventional screw-retained prostheses. Modern implantology relies on hybrid abutment techniques and cemented-screwed prostheses to reduce the risk of these complications, especially in combination with digital methods and Ti-based abutments. This lecture will address each area in detail.

Abstract 17

Recent Advances, New Concepts, and Future Prospects of Ridge Augmentation (Vertical /Horizontal) and Bone Regeneration around Dental Implants or Natural Teeth by GBR/GTR Techniques

Dr. Mehrdad Lotfazar
Periodontist, Private practice

Whenever dimensions of the alveolar bone are inadequate, horizontal and/or vertical ridge augmentation before dental implant placement would be necessary. Various surgical techniques can be used to reconstruct alveolar bone for implant placement. Guided bone regeneration (GBR) is a bone grafting technique that uses a barrier membrane. During the past two decades, GBR has become a clinically standard procedure for treating horizontal and/or vertical alveolar bone defects. Vertical ridge augmentation is one of the most challenging surgical procedures in dentistry that aims to restore the previous levels of bone height where no osseous wall containment is present. There are various advancements in biomaterials and membranes for horizontal and vertical ridge augmentation. Barrier membranes play an important role in regulating bone regeneration via GBR/GTR techniques. The latest research has shown that different membranes may present different cellular responses and molecular mechanisms in various hosts. Cellular and molecular events in the membrane are linked to the regenerative and remodeling processes of the underlying defect. This presentation aims to review recent advances in horizontal and vertical ridge augmentation by GBR and highlights the evolving knowledge of the biological role of GBR/GTR membranes. Future research efforts should target both biomaterials and host tissue responses.

Abstract 18

Customized Titanium Mesh in Reconstructive Surgeries: Advancements and Applications

Dr. Farid Shiezadeh
Periodontist, Department of Periodontology, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran

Highlight the importance of customized solutions to address individual patient needs.
Introduce the scientific topic of customized titanium.
mesh and its advancements in reconstructive surgery.
Titanium as an Ideal Material for Reconstructive.
Surgery.
Discuss the properties of titanium that make it suitable for medical applications, such as its biocompatibility, corrosion resistance, and mechanical strength.
Explain how titanium meshes can be customized to fit.
individual patients for anatomical requirements.
Advancements in Customization Techniques.
Explore the evolution of customization techniques, from manual shaping to computer-aided design (CAD) and three-dimensional (3D) printing.
Discuss the benefits of CAD and 3D printing, including precise fit, reduced surgical time, and improved patient outcomes.
Present case studies or examples showcasing the successful application of these techniques.

Applications of Customized Titanium Meshes in Reconstructive Surgery.
Clinical Outcomes and Benefits.
Present clinical data and studies demonstrating the efficacy and safety of customized titanium meshes in reconstructive surgeries.
Discuss the advantages of using customized titanium mesh, such as reduced treatment time, improved aesthetic outcomes, and enhanced patient satisfaction.
Highlight the potential for improved long-term outcomes and reduced corrective surgeries.
Challenges and Future Directions.
Address potential challenges associated with customized meshes, such as cost, accessibility, and the need for specialty expertise.
Discuss ongoing research and future directions, such as developing bioactive coatings to promote tissue integration and using patient-specific stem cells for enhanced regeneration.
Summarize the advancements and applications of customized titanium meshes in reconstructive surgery.
Emphasize the potential of this technology to revolutionize the field, improve patient outcomes, and enhance the quality of life.
Encourage further research and collaboration to overcome challenges and continue advancing this innovative approach in reconstructive surgery.

Abstract 19

Periodontal Plastic Surgery

Dr. Navid Sharifzadeh
Periodontist, Private practice

This presentation will delve into the fascinating world of periodontal plastic surgery. We will explore a variety of techniques and approaches for root coverage procedures, specifically focusing on single and multiple gingival recessions. Some techniques that will be discussed include the laterally positioning flap, coronally advanced flap, and VISTA technique. In addition to these techniques, we will also explore the concept of periodontal phenotype modification. By the end of this presentation, you will have a comprehensive understanding of the various techniques and concepts involved in periodontal plastic surgery.

Abstract 20

Soft Tissue Management around Implants

Dr. Mohammadreza Talebi
Periodontist, Department of Periodontology, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Soft tissue is important to the long-term stability of dental implants. There is no specific time for the management of peri-implant soft tissues. Management of soft tissues around implants is classified into four categories:
1) before implant placement
2) during implant placement
3) at the time of healing abutment placement
4) after abutment cementation
In this presentation, some cases will be presented in different categories, and suitable techniques for soft tissue management will be shown.

Abstract 21

Soft and Hard Tissue Considerations in Aesthetic Zone Immediate Implants

Dr. Amir Moeintaghavi[1], Dr. Gholamali Gholami[2]
Dr. Alikamyar Abdolali[3], Dr. Maryam Zohary[4]
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[2]Periodontist, Department of Periodontology, School of Dentistry, Shahid Beheahti University of Medical Sciences, Tehran, Iran
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Key factors for success in esthetic zone implantation: Many factors should be considered for immediate or delayed implantation in the esthetic zone to achieve

favorable functional and esthetic outcomes. Appropriate implant diameter, 3D implant positioning, buccal bone thickness, and soft tissue thickness are key factors that must be considered to achieve the best results.

Abstract 22

Periodontal Plastic Surgery

Dr. Amirreza Moayer
Periodontist, Private Practice

Adequate width of keratinized gingiva (≥2 mm) with a thickness of ≥2 mm is critical for optimum health and aesthetic appearance of implant-supported restorations, provided implants are placed in the ideal 3D position. Mucogingival plastic surgeries could improve regeneration of the dehiscences in peri-implant buccal soft tissue, papilla, and the width of keratinized gingiva. The appropriate technique should be selected for each particular indication. This presentation provides a brief review of soft tissue complications and management techniques.

Abstract 23

Gingival Phenotype Modification with Acellular Dermal Matrix

Dr. Saman Nasiri
Periodontist, Private Practice

Periodontal phenotype is determined by gingival phenotype and bone morphotype. A thin gingival phenotype has been associated with a greater risk of developing gingival recessions. Gingival phenotype can affect the outcome of periodontal therapy, root coverage procedures, and implant therapy. Acellular dermal matrix (ADM) is a product made from skin and has two surfaces. ADM has a variety of uses as a substitute for connective tissue. It can be integrated into the host's connective tissue in three months. ADM has an effective and established role in gingival phenotype modification and increasing gingival thickness. ADM makes patients more comfortable, reduces surgery time, and yields good results.

Abstract 24

De-epithelialized Free Gingival Graft versus Subepithelial Connective Tissue Graft in treating Gingival Recession

Dr. Zahra Alizadeh
Periodontist, Private Practice

Gingival recession is characterized by displacement of the gingival margin apical to the cementoenamel junction, exposing some portion of the root surface. Different surgical procedures are performed for root coverage, mainly because of functional and esthetic problems. Coronally advanced flap with subepithelial connective tissue graft (SCTG) is considered the gold standard for treating gingival recession. However, for harvesting SCTG, the thickness of the palatal fibromucosa should be adequate. Recently, the de-epithelialized free gingival graft (DFGG) has been introduced, which is harvested as a free gingival graft and then extraorally de-epithelialized. DFGG allows palatal harvesting regardless of fibromucosa thickness. DFGG is essentially composed of lamina propria with large amounts of fibrous connective tissue. At the same time, SCTG comprises palatal submucosa, which primarily contains more fatty and glandular tissue. Once the harvesting approach was demonstrated to be ineffective in patient morbidity, the use of a DFGG has become widespread. The aim of this review is to evaluate the use of DFGG in comparison with SCTG in different root coverage surgical procedures with a focus on histologic findings, postoperative morbidity, clinical outcomes, and late complications.

Abstract 25

Demystifying Controversies in Esthetic Implantology

Dr. Omid Moghadas
Periodontist, Private Practice

Immediate tooth replacement in the esthetic zone is among the mainstream treatment modalities. The balance between achieving primary stability, choosing proper implant diameter, and gap management and provisionalization is a delicate dance yet essential for success and esthetics in treatments. However, esthetic risks and complications exist, such as apical perforations,

loss of labial plate thickness over time, and loss of the interdental papilla. In this presentation, different essential issues and controversies will be discussed in detail.

Abstract 26

Advancements in Stem Cell-based Therapies for Oral and Periodontal Regeneration

Dr. Nasser Aghdami
MD, PhD, Department of Regenerative Medicine, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran

In recent years, significant progress has been made in regenerative medicine, particularly in dentistry, focusing on the regeneration of dental, oral, and periodontal tissues. Root canal therapy and periodontal diseases present formidable challenges in oral healthcare, resulting in postoperative complications and irreversible damage to tooth-supporting tissues. Stem cell-based therapies offer substantial promise in managing diverse dental ailments. Mesenchymal stem cells (MSCs), distinguished by their capacity to differentiate into various cell types, have emerged as pivotal contributors in regenerative dentistry. Dental stem cells, exemplified by periodontal ligament stem cells (PDLSCs), demonstrate significant potential owing to their multilineage differentiation potency. Notably, non-dental stem cells, such as bone marrow MSCs (BMMSCs), provide viable alternatives for effective periodontal regeneration. Tissue engineering, involving the interplay of cells, scaffolds, and growth factors, is pivotal in regenerative dentistry. Innovative strategies, such as three-dimensional (3D) composite cell sheets, amalgamating diverse stem cell types, and the integration of bioactive molecules, have demonstrated enhanced regenerative outcomes. Scaffold materials, encompassing natural biomaterials, bioceramics, and synthetic polymers, are under scrutiny for facilitating 3D periodontal regeneration. The transition towards multiphasic constructs, facilitated by electrospinning and 3D bioprinting technologies, accentuates the significance of biomimetic periodontal tissue engineering. However, challenges persist in stem cell acquisition, expansion, immunogenicity, and ethical considerations, prompting exploration of exploiting intrinsic regenerative potential without exogenous stem cells.

Abstract 27

The Future of Medical Gene Therapy

Dr. Ehsan Arefian
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Stem Cells Technology and Tissue Regeneration Department, School of Biology, College of Science, University of Tehran, Iran

Gene therapy is an emerging field in dentistry that holds the potential for treating and preventing various oral conditions and diseases. Gene therapy involves introducing genetic material into cells to correct or modify their function. In dentistry, this approach aims to target and manipulate the genes responsible for oral health. The areas where gene therapy is being explored in dentistry include salivary gland dysfunction, periodontal disease, dental caries, and oral cancers. Some individuals suffer from conditions that reduce salivation, leading to dry mouth and an increased risk of dental caries and oral infections. Gene therapy aims to introduce specific genes into salivary gland cells to enhance salivation and alleviate dry mouth symptoms. Gene therapy is being investigated as a potential treatment for periodontal disease, a chronic inflammatory condition affecting the gingiva and supporting structures of the teeth. Researchers are exploring gene delivery systems to target and modulate genes involved in the immune response and tissue regeneration to enhance the body's ability to heal and regenerate periodontal tissues. Gene therapy approaches are being studied to prevent dental caries by targeting the genes responsible for enamel development and strengthening. The idea is to introduce genes that enhance enamel mineralization, making teeth more resistant to decay. Gene therapy holds promise for treating oral cancer by targeting specific genes involved in tumor growth and metastasis. Researchers are exploring gene delivery systems to introduce therapeutic genes or inhibit the expression of oncogenes, potentially leading to more effective cancer treatments with fewer side effects.
Dentistry encompasses a wide range of oral health conditions, including gingival disease, dental caries, and tooth loss. Traditional treatment methods often focus on symptom management or replacing damaged tissues with prosthetics. However, regenerative medicine presents an alternative paradigm by harnessing the body's innate regenerative potential. It is important to note that gene therapy in dentistry is still in its early stages, and much of the research is being conducted in preclinical models or small-scale clinical trials. Developing and implementing

gene therapy approaches in dentistry require further research, refinement, and rigorous testing to ensure safety and efficacy.

Abstract 28

Future Trends in Regenerative Medicine

Dr. Arash Khojasteh
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Biomaterial development, application of growth factors, and cell therapy approaches open new horizons in regenerative medicine, but actual translation from bench to bedside has not happened yet. The actual in vivo differentiation of stem cells, megadose application of growth factors, and absence of proper vasculature in tissue-engineered scaffolds are the main disadvantages of the current approaches for tissue engineering. Changing cell sources, smart scaffolds, dynamic cell culture methods, and bedside modification are the main approaches scientists are trying to use to enhance the success rate in bone regeneration. Following the advancement of CAD/CAM technologies, bioprinters and bioreactors open new gateways to regenerative medicine principles in treating tissue defects. In this presentation, we will discuss the future of tissue engineering studies in medicine.

Abstract 29

Photobiomodulation: The Fourth Side of Tissue Engineering

Dr. Reza Fekrazad
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International Network for Photo Medicine and Photo Dynamic Therapy (INPMPDT), Universal Scientific Education and Research, Network (USERN), Tehran, Iran

Photochemistry is a subspecialty of chemistry focusing on the chemical reactions that occur by the atoms' light absorption. Different examples of photochemistry are vitamin D production with sunlight, photosynthesis, and vision initiation by rhodopsin. Photobiomodulation (PBM) is a mechanism in which a nonionizing visible or near-infrared light form is absorbed by endogenous chromophores, causing photochemical and photophysical reactions on different levels of biological scales without causing any thermal damage. PBM therapy is a photon-based therapy based on the fundamentals of PBM. Various light sources such as lasers, broad-band light, and light-emitting diodes (LEDs) in the near-infrared and visible spectrum can be used to this end. Living organisms' cells need to communicate with each other to thrive. Different pathways are used through direct contact, the nervous system, and secretions (paracrine, autocrine, juxtracrine, and endocrine signaling). The nature of these messages is considered chemical or molecular by conventional medical scientists. We can find different pathways of message transition between cells, such as electrical signaling, bio-resonance signals, low-intensity pulsed ultrasound, and ultra-weak photon emission. Various effects of PBM therapy have been discovered, such as inflammation reduction, stifling of pain, downregulation of aberrant immune responses, and diverse metabolic effects. On the other hand, the impact of PBM therapy on tissue regeneration and healing process improvement has been proven. Regenerative medicine has revolutionary potential by combining novel therapies such as PBMT and stem cell therapy, resulting in prompt and complete recovery and decreasing the risk of organ transplantation rejection due to autologous grafts. From my point of view, the triangle of tissue engineering consisting of a cell, scaffold, and chemical growth factors will change to a square, adding a side consisting of physical signals from biophotons shortly. As scientists interested in PBM, we should continue to enhance our understanding of basic and complex mechanisms on subcellular and organismal levels. We are all trying to understand and quantify these mechanisms to personalize clinical therapies based on genetic mapping for personalized PBM therapy. Much has been done, but there is more to achieve.

Abstract 30

New Classifications and Clinical Guideline: Diagnosis and Management of Periodontits

Dr. Reza Amid[1], Dr. Neda Moslemi[2], Dr. Solmaz Akbari[2], Dr. Anahita Moscowchi[1]
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Different classification systems are used for the differential diagnose of periodontal diseases and identification of periodontitis cases. The most recent of these classification systems, presented in 2017, divideds periodontitis into four degrees of staging and three stages based on severity, complexity, and progression rates. It is necessary for all clinicians to understand the rationale used in this system, along with its difficulties and limitations. In this panel, by presenting a simple and multi- step diagnostic algorithm, we try to show a coordinated process to overcome the complexities of the new classification system. In addition, we will review some clinical cases treated via non-surgical and surgical interventions based on clinical practice guidelines. The correct diagnosis of the disease and determining the types of periodontal lesions are crucial for choosing between resective and regenerative treatment approaches. The use of multi-disciplinary treatments is also necessary to reach a stable occlusion.

Abstract 31

The Age of AI in Health Has Begun, Whether You Like It or Not!

Dr. Salar Arzideh
Entrepreneurship Faculty, University of Tehran, Tehran, Iran

The Age of AI in Health is a thought-provoking exploration of the transformative impact of artificial intelligence (AI) on the healthcare landscape. As we live amid a technological revolution, this presentation is designed to address how AI approaches the daily practices of healthcare providers. The abstract explores the various applications of AI in healthcare, from diagnostic innovations and treatment planning assistance to personalized patient care. By examining the current state of AI implementation, Iranian healthcare providers will gain valuable insights into the efficiency, accuracy, and potential improvements in patient outcomes that AI promises to deliver. However, this presentation is not just a celebration of technological progress. There is a comprehensive examination of the challenges and ethical considerations associated with implementing AI in healthcare. By clearly addressing concerns and uncertainties, the abstract aims to foster meaningful dialogue among healthcare providers, encouraging a proactive approach to harnessing the benefits of AI while navigating potential pitfalls. The session will conclude with a look to the future, equipping participants with the knowledge and awareness needed to adapt to the inevitable changes brought about by the age of AI in healthcare. Iranian periodontists are invited to collectively reflect on the evolving nature of their profession and embrace the opportunities presented by the integration of AI, ultimately ensuring the delivery of improved and patient-centered care, patient in the modern era.

Abstract 32

Applications of Artificial Intelligence in Dentistry: Past, Present, Future

Dr. Surena Vahabi
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Recently, dentistry, like other aspects of biomedical sciences, has evolved since the introduction of artificial intelligence (AI) as a useful aid in enhancing human cognitive functions, especially in clinical decision-making processes. Mimicking the detailed steps of human learning, AI can help the clinician with extracting and analyzing data, creating outputs to interpret dental images, presenting differential diagnoses, and making predictions on the incidence or the prognosis of the disease. Using the deep convolutional neural network models, AI algorithms have improved the sensitivity, specificity, and accuracy of detecting periapical, periodontal, and peri-implant bone loss, detecting cysts and tumors of the jaws, staging of periodontitis/peri-implantitis, simulating directions in implant surgery, predicting complications following oral and maxillofacial surgeries, etc. The ability of the machine to learn even deeper during multiple ongoing supervised tasks is a promising property of AI, probably making it a potentially necessary tool in future dental practices. The purpose of the presentation is to review the current pool of evidence in dentistry, periodontics, and implantology, which may hopefully improve the quality of dental treatments.

Abstract 33

Application of AI in Modern Periodontology

Dr. Sahar Cheperli
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The latest study on the application of artificial intelligence in medicine and dentistry suggests that scientists prioritize medicine over dentistry due to the impact of the coronavirus epidemic. However, after the epidemic, it is evident that AI can play a crucial role in diagnosing and planning treatments, especially when there is a decrease in the doctor-patient ratio and a sudden increase in patients. This feature of AI is particularly beneficial for newly graduated or less educated dentists, as it allows them to make informed decisions and treatment plans by learning from the gold standard in any field of dentistry through AI networks. One specific application of AI in dentistry is detecting dental plaque, which can alert individuals to the presence of plaque after dental hygiene procedures. Treatment planning, a critical aspect of periodontology, can pose challenges for less experienced dentists. However, with the assistance of AI, they can access the gold standard and make more informed decisions. The widespread use of dental implants has led to complexities in identifying the type of fixture used in surgeries performed by unknown surgeons. AI can help select the appropriate gingiva former and abutment for such cases. Furthermore, deep learning networks developed by our team can detect marginal bone loss and caries by analyzing depth. One of the most exciting aspects of AI application in dentistry is its ability to predict the long-term success of dental implants by considering multiple factors. Machine learning-based prediction models are particularly intriguing in this regard.

Abstract 34

Overtreatment or Malpractice?

Dr. Mehdi Ekhlasmandkermani[1], Dr Behzad Houshmand[2], Dr Ali Momen[1], Dr. Mehdi javan[3], Dr. Vafa Moshirabadi[4], Dr. Omid keyhan[4]
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[3]Prosthodontist, Private Practice
[4]Oral and Maxillofacial Surgeon, Private Practice

Considering different views in the treatment planning, with a panel consisting of specialists in periodontics, maxillofacial surgery, and dental prostheses, we will compare the treatments, some of which were unnecessary for implementation or were based on the wrong choice. This way, we try to inform the audience about wrong or unnecessary treatments and involve practitioners in the correct treatment plan.

Abstract 35

Customized 3D Zirconia Barriers for Guided Bone Regeneration (GBR): Clinical Case Series

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In this article, we delve into the intricacies of crafting a zirconia mesh specifically tailored for jaw bone grafting and GTR applications. We provide detailed step-by-step instructions on the fabrication process, meticulously explaining how to shape and size the mesh to fit the desired area. We also cover the selection of appropriate zirconia materials, highlighting their strength, biocompatibility, and resistance to corrosion. Additionally, we explore the various surgical techniques involved in the placement and fixation of the zirconia mesh. Expert guidance is provided on the precise positioning of the mesh to ensure optimal stability and support during bone grafting and GTR procedures. The video further addresses the best practices for suturing and securing the mesh to facilitate proper tissue regeneration. By engaging in this enlightening tutorial, you will gain a comprehensive understanding of the fabrication and utilization of zirconia mesh for jaw bone grafting and GTR. You will acquire the necessary skills and knowledge to confidently incorporate this technique into your practice, thereby enhancing the success rate of your procedures and promoting optimal patient outcomes.

Abstract 36

Minimally Invasive Approach in Digital All- on-X Concept for Full-mouth Rehabilitation

Dr. Omid Amirinasab
Periodontist, Private Practice

Full-mouth rehabilitation with dental implants is a challenging and complex procedure that requires careful planning and execution. One main difficulty is avoiding anatomical structures such as the maxillary sinus and the mandibular inferior alveolar nerve, which may limit the available bone volume and implant length. Moreover, conventional implant surgery involves raising a flap to expose the bone, which may cause postoperative complications such as pain, swelling, bleeding, and infection. Therefore, a minimally invasive approach has been proposed to overcome these limitations. This approach involves placing 4–6 implants per arch, with two or more posterior implants tilted to increase the implant–bone contact and reduce the cantilever length. The implants are placed using a computer-guided system that integrates digital facial scans, intra-oral scans, laboratory scans, and cone-beam computed tomography. Some of the advantages of using a digital approach for all-on-x implants are:

- Higher patient satisfaction (extremely cost-efficient)
- Reduction of working time
- Alternative to traditional implants, not requiring bone grafts and advanced procedures

Abstract 37

Facially Driven Full-mouth Immediate Rehabilitation

Dr. Ehsan Birang
Periodontist, Private Practice

Nowadays, oral reconstruction using dental implants is an up-to-date treatment with strong evidence. The success of implant treatment is high, and the important point is long-term success. Over time, the definition of success and failure of treatment has also changed significantly. One of the most important factors influencing the success of the treatment is the patient's satisfaction with the treatment's aesthetic. If the patient is dissatisfied, the treatment is not considered successful according to current criteria. In addition to prosthetic-driven factors for full-mouth rehabilitation, we must also consider the necessary points to achieve esthetic and functional success. In this way, the viewpoint of facially driven full-mouth rehabilitation is proposed, whose scientific points will be required for treatment. With advances in computer science in the field of implant treatment and with the benefit of specialized software, we will have a remarkable help in this regard.

Abstract 38

Digital Immediate Implantation and Temporization in Fully Edentulous Arches

Dr. Reza Molla
Periodontist, Private Practice

The constant demand of dental patients for simpler and shorter treatments has been a critical factor in everyday dentistry. Clinicians are seeking solutions to reduce the time of edentulism and deliver fixed prostheses supported by dental implants. Dental implant manufacturers are also looking for effective solutions to reduce osseointegration time and provide components for immediate implant temporization. Today, clinicians are increasingly faced with requests for fixed temporary prostheses on dental implants, particularly in cases requiring full-arch treatments. In such an approach, multi-unit abutments are an efficient and fast solution that offers a high level of biological compatibility in delivering temporary prostheses to patients, known as screw-retained prostheses. In the first part of this presentation, I aim to introduce this treatment as an effective proposition in your daily practice as a periodontist or implant surgeon. In the second part, I will delve into the technical details of this treatment. Despite the additional time required during the implant placement session for selection, alignment, and closure of abutments by the treatment team, the advantages of multi- unit abutments in such cases are the speed and simplicity of product design and production, as well as the speed and ease of delivering the prosthesis in the clinic. This makes it a preferred choice for immediate implant temporization in full-arch treatments.

Abstract 39

Immediate Loading of Digital Screw-retained Restorations

Dr. Omid Tavakol
Prosthodontist, Private Practice

In this presentation, we will talk about dental implant loading protocols, from conventional to immediate loading. We are going to discuss different types of abutments used in immediate loading. Comparing different types of retention regarding implant-supported prostheses is another issue we will discuss in our lecture. Explaining the exact procedure from A to Z, along with digital workflow from the clinic to the laboratory and back to the office, is another interesting issue we will discuss. Finally, we will discuss try-in, delivery, and follow-up in conjunction with occlusal considerations. Problem-solving and how to prevent and manage complications is an inseparable part of every treatment and should be discussed thoroughly.

Abstract 40

Digital Workflow in Full-mouth Rehabilitation with Implants

Dr. Aziz Goshaderoo
Prosthodontist, Private Practice

Edentulism has some complications, like poor aesthetics, difficulty chewing, impaired mastication, and functional problems. Full-mouth rehabilitation with fixed implant-supported prostheses is one of the challenging treatments because important factors in aesthetic and function should be considered. For lower postoperative complications and higher satisfaction of the patient and clinician, the treatment steps should be carefully planned and executed so that the final results of the treatment can be foreseen. Fixed implant restorations are an ideal treatment with a high success rate. The recent advent of digital technology has affected most dental treatments and made the treatment process easier and more accurate. This case presentation describes the step-by-step surgery, immediate loading of implants, and digital prosthetic treatment procedures. Each topic discusses the latest articles and techniques.

Abstract 41

The Emerging Role of Induced Pluripotent Stem Cells and its Derivatives in Periodontal Regeneration: A Scoping Review of Preclinical Studies

Dr. Aida Kheiri
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The main goal of periodontal regenerative therapy is to regenerate fully functional tissues that can replace the deteriorated ones resulting from periodontitis and injuries. Tissue engineering methods provide promising results in periodontal reconstruction, and within its development, induced pluripotent stem cells (iPSCs) present a reliable candidate cell source for this goal. This review aimed to assess preclinical studies regarding the potential of iPSCs in inducing the regeneration of periodontium. Studies that evaluated the direct or indirect impact of iPSCs in differentiation to periodontal-related tissues were included. Eight of the ten included studies had both in vitro and in vivo parts. Growth/differentiation factor-5 and enamel matrix derivative were the most used signaling molecules, followed by bone morphogenic protein-2 and metformin. Most studies reported positive outcomes regarding vascularization, bone formation, and periodontal-related markers' expression. Using iPSCs and their derivatives may lead to a novel tissue engineering platform for periodontal regeneration.

Abstract 42

Application of Leukocyte Platelet-rich Fibrin (L-PRF) in Periodontology and Implant Surgery: A Review Study

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Platelets play an essential role in wound healing and periodontal regeneration; therefore, using platelet concentrates can accelerate wound healing after periodontal treatment. Leukocyte platelet-rich fibrin (L-PRF), an autogenous concentrated blood product, is a fibrin matrix comprising molecular and cellular elements that allow for optimum improvement. PRF also increases the production of osteoprotegerin, which causes osteoblast proliferation and acts as an osteoconductive and osteoinductive material, initiating bone regeneration. Platelet concentrates are used in many areas of dentistry, including soft tissue improvement, plastic periodontal surgery, gingival enlargement, ridge preservation, regeneration of bone defects, drug-related osteonecrosis of the jawbone, sinus augmentation, immediate implant placement, and implant osseointegration. Their use is preferred due to their ease of application and low cost. This paper reviews the current literature concerning the use of platelet-rich fibrin in implantology. The membrane

was prepared after blood collection in glass tubes and centrifuged for 12 min (400 g) at 2700 rpm (Intraspin, Intralock, US) to compress the fibrin clot. L-PRF demonstrated a significant clinical and radiographic additive effectiveness on furcation involvement, increased keratinized gingiva around the implant, treatment of sinus perforation, immediate implantation at the infected site, alveolar ridge preservation, guided bone regeneration, etc. According to the available data, L-PRF in dentistry may positively impact patient-related postoperative outcomes. However, there is vast heterogeneity in protocols and a lack of guidelines for clinical application for L-PRF. Further studies are urgently needed to justify the standardized use of PRF during oral surgery.

Abstract 43

Prognosis of Dental Implant Using Artificial Intelligence: A Systematic Review

Dr. Hamzeh Maghfouri, Dr. Arefe Pourmajidian
Dentist, Private Practice Dentist, Private Practice

Dental implants have become a prevalent method for replacing lost teeth and enhance masticatory function and aesthetics. Many individuals suffer from tooth loss and require dental implants, with 2.5 million implants performed annually in the United States alone. Successful implant treatment requires the right materials, a proficient surgeon, precise placement, and a fitting prosthesis. Given the expense, invasiveness, and importance of implants, a thorough evaluation is vital to ensure lasting quality. Traditional diagnostic tools encompass intraoral exams, various radiographs, and CT scans. However, artificial intelligence (AI) has emerged as a game-changer, offering accelerated and precise predictions for implant success. AI's potential in dental fields and broader medical diagnoses is undeniable. Especially in dental implantology, AI's applications, primarily with radiographic images, are transformative. A thorough search of databases and journals led to the critical analysis of the most relevant and high-quality articles, focusing on their methodologies, AI techniques, imaging modalities, and results. Research findings demonstrate that using artificial intelligence has yielded highly favorable results, achieving an accuracy rate exceeding 90%. This review highlights AI's growing role in predicting implant outcomes and its integration with conventional diagnostic methods.

Abstract 44

Efficiency of a New Alcohol-free Chlorhexidine Mouthwash in Gingivitis Patients: A Preliminary Study

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For a long time, chlorhexidine (CHX) has been considered the most widely used mouthrinse for reducing plaque and gingivitis. It is commonly used as an antiseptic for its antimicrobial effects by dental practitioners and the public. Aims: The present investigation evaluated the effectiveness of a new alcohol-free chlorohexidine mouthrinse solution containing thyme extract, peppermint, xylitol, eucalyptus, and formation in comparison with conventional oral hygiene measures in gingivitis patients in terms of clinical parameters. Ninety patients suffering from gingivitis, aged 21–43 years, were chosen. The subjects were divided into two groups, and clinical parameters were recorded before phase I therapy. The patients were put on different oral hygiene regimens with and without chlorhexidine (HamiDent®) mouthwash. At baseline and three months postoperatively, the subjects were evaluated. Statistical analysis was performed using SPSS 22. The results showed significant decreases in clinical parameters from baseline to 3 months in both groups ($P<0.01$). The patients in groups using new chlorhexidine mouthwash showed a highly significant reduction in all the parameters compared to subjects in groups using conventional toothbrushing only. Chlorhexidine mouthwash belongs to a class of drugs known as antimicrobials. It works by decreasing bacterial counts in the mouth, helping to reduce swelling and redness. Within the limitations of this study, it might be possible to conclude that long-term regular use of the new alcohol-free mouthwash seems beneficial.

Abstract 45

Comparing the Clinical Outcomes of Free Gingival Graft Augmentation on Periosteal Bed and Denuded Alveolar Bone Recipient Site: A Randomized Clinical Trial

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This study compared postoperative graft shrinkage and pain intensity after soft tissue augmentation using a free gingival graft (FGG) on denuded alveolar bone and the periosteum. This clinical trial included patients with gingival recession defects between teeth #29 and #20 that required FGG augmentation. Patients were randomly assigned to experimental and control groups. FGG was placed over denuded alveolar bone in the experimental group, whereas FGG augmentation was performed on a periosteal bed in the control group. Mesiodistal and apicocoronal graft dimensions were measured using a periodontal probe and intraoral photographs. Graft surface area was calculated. Pain was measured using a visual analog scale (VAS). The variables were recorded at baseline and 1, 2, 4, and 8 weeks postoperatively. The significance level was set at 0.05. Twenty-two subjects,

comprising 15 females and 7 males, participated. At all postoperative time intervals, graft shrinkage percentage in all dimensions was greater in the control group compared to the experimental group. In both groups and across all time points, apicocoronal alterations exhibited greater changes than mesiodistal alterations. Surface area shrinkage between baseline and 8 weeks postoperatively was significantly greater in the control group compared to the experimental group (P<0.001). Mean VAS values were greater in the control group but only significantly greater during the first week postoperatively (P=0.006). Placing an FGG on denuded alveolar bone is associated with less graft shrinkage and postoperative pain than when placed on the periosteum over an 8-week healing period.

Abstract 46

Artificial Intelligence in Implant Dentistry

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Several branches of science and engineering have been influenced by artificial intelligence (AI) and machine learning. AI is a general term used for any computer system that exhibits intelligent behavior. AI is a technology rapidly gaining attention in many fields of science, including implant dentistry. The primary goal of machine learning is to be able to detect analogous patterns in new data for multiple applications. The best advantage of this technology is that it solves complex problems that are difficult to solve by conventional methods. This article aimed to assess the role of AI in implant dentistry in determining implant type, the best position of implant, and success prediction by assessing patients' risk factors. An electronic systematic review was completed from MEDLINE/Pubmed, Embase, Cochrane, and Scopus. A manual search was also done. We searched the articles from 2020. Most studies identified applied AI in patients' history, classification of implant systems, determination of the best position for the implant, and prediction of success. AI applications are developing in dental implant dentistry but have not been systematically recognized. This technology for implant type selection, success rate prediction, and best implant design and material has great potential but is still undeveloped, and further studies are needed for clinical application. Although this novel protocol cannot replace the role of a surgeon, there would be a need to become acquainted with it.

Abstract 47

The Assessment of the Proliferation of Fibroblasts and Adhesive Molecules in the Vicinity of the Nanozirconia Mixed with Glass-Ionomer

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This study aimed to investigate the impact of zirconia nanoparticles mixed with glass-ionomer on the proliferation of fibroblasts and adhesive molecules (ICAM-1). The method involved mixing zirconia nanoparticles with glass-ionomer powder in varying weight percentages (0%, 5%, 50%, 70%, and 100%), which were then combined with glass-ionomer liquid in a 2:1 weight ratio. The resulting paste was placed in a steel ring mold, sandwiched between two glass slides, and cured using a light-curing unit. Seven samples were prepared for each mixing percentage, and cytotoxicity tests were performed using cell cultivation (fibroblast) and MTT tests. The human ICAM-1 platinum ELISA test was also performed to determine the concentration of human ICAM-1 fibroblasts. The results indicated that specimens with different nano-zirconia contents had statistically significant differences (P<0.001) in cytotoxicity after 1 hr, 24 hrs, and one week. However, no significant differences were observed between the specimens in the ICAM-1 molecule released from fibroblasts. The study concluded that incorporating pure zirconia nanoparticles delivers the lowest cytotoxicity level, and higher concentrations of zirconia nanoparticles contribute to lower cytotoxicity levels.

Abstract 48

Use of the Additively Manufactured Subperiosteal Jaw Implant (AMSJI) for Severely Atrophic Maxillary Ridge Rehabilitation, Computer-assisted, Template- guided: A Case Report and a Literature Review

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In this case study, we present the maxillary rehabilitation in a 25-year-old female patient with severe atrophy in the maxilla and mandible, oligodontia, a history of orthognathic surgery, and failed autologous bone graft surgery. Severe bone loss following the previous unsuccessful surgery rendered routine treatment options impossible. Additionally, we present a literature review of five related papers in this field. An additively manufactured subperiosteal implant (AMSJI®) was chosen for upper jaw rehabilitation, enabling immediate functional restoration in a single surgical session utilizing CAD/CAM technology, cone-beam computed tomography (CBCT), and 3-dimensional (3D) treatment planning software. Correction of the mandibular occlusal plane was required to prevent an anterior open bite, while palatal anchorage was preferred due to inadequate keratinized mucosa and fibrotic scarring. This case report showcased the successful rehabilitation of the severely atrophic maxilla and mandible using AMSJI® and implant-supported dental prostheses with a digital workflow. No complications were observed in our patient during the three-year follow-up period. Contemplating the successful outcome in our case report and the literature review of five papers in this study, the AMSJI would be an entirely safe and reliable treatment for severely edentulous patients. However, further well-designed studies with larger sample sizes and long-term follow-ups are needed to establish the efficacy and optimal approach for treating edentulous patients with severe alveolar bone atrophy.