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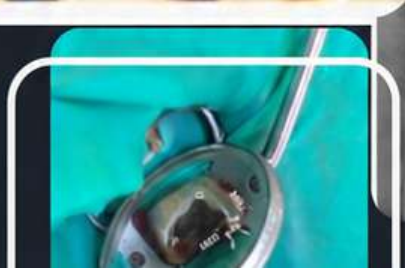
JOURNAL OF RESTORATIVE DENTISTRY AND ENDODONTICS

JRDE

Special issue
April 2026



Official publication of
Association of Conservative dentistry
and Endodontics
(ACE- Karnataka)

JRDE

Journal of Restorative Dentistry and Endodontics

Special Issue
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Journal of Restorative Dentistry & Endodontics

The scope of the journal is to publish manuscripts in the specialty of conservative dentistry & endodontics and aims to influence the practice of dentistry at clinical, research and ethical level on national and international basis.

The Journal strives to publish high quality research papers that disseminate scientific and clinical knowledge. Original scientific articles, Case report and Review articles are published in the areas of applied materials science, bioengineering, epidemiology and social science relevant to conservative dentistry & endodontics.

Peer Review Process: All manuscripts undergo a double-blinded review process. The article once submitted will undergo a thorough plagiarism check and an initial check is conducted to ensure that all author instructions are complied with and the guidelines for submission are followed. The manuscript may be returned to the author for corrections, if required to conform to the journal instructions. Once, the article is confirmed, it will undergo editorial review within 1 week. Following this it will then be sent for peer review, which takes 6-8 weeks and the authors will receive the mail from the Editor stating the final decision of the manuscript. Once found suitable, it is assigned to one of the Associate Editors on the editorial board. Manuscripts not found suitable will not be sent out for review and will be immediately rejected, and authors informed. For articles describing original research in humans and animals, a letter of approval from the Institutional Ethics Committee must accompany these manuscripts or a letter stating that the Institutional Review Board had waived the need for informed consent.

All research shall be conducted as per the World Medical Association Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects. (modified in 1983 - see https://www.wma.net/wp-content/uploads/2016/11/DoH-Oct2013-JAMA.pdf). The research must adhere to the 5 principles of ethics of research: informed consent, voluntary participation, privacy and confidentiality, justice, and beneficence, and right to review.

Journal of Restorative Dentistry and Endodontics

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FROM THE EDITOR'S DESK

Dear Members and Readers,

It is an honor to address you through the pages of the ACE Karnataka Journal, a publication that reflects the academic rigor and clinical passion of our specialty in the state. Karnataka has always been at the forefront of Conservative Dentistry & Endodontics. Our institutions nurture talent, our practitioners deliver world-class care, and our researchers contribute meaningfully to global literature. As President of ACE Karnataka, I see this journal as both a mirror and a window. It mirrors the quality of work happening across our colleges and clinics, and it opens a window for the rest of the country to learn from us.

I invite every member to engage with this journal. Submit your work, cite your colleagues, and challenge ideas respectfully. A specialty grows only when its members write, read, and think together. My sincere thanks to the editorial team led by Dr. Veena Pai for their tireless effort in bringing out this issue. To all our members thank you for keeping the ACE flag high.

Dr. Mohan Thomas Nainan

President, ACE-Karnataka

EDITORIAL

The State-Level Conference titled **"PRESERVE – PROTECT – PERFORM: Biology Preserved, Function Restored and Excellence Delivered"** was successfully convened on the 23rd and 24th of January 2026 at Vydehi Institute of Dental Sciences & Research Centre. The conference provided a vibrant scholarly forum for academicians, researchers, industry experts, and students to deliberate, disseminate research outcomes, and exchange pioneering insights in the specialized domain of Conservative Dentistry and Endodontics.

The conference convened 357 student delegates and 30 faculty representatives from prominent dental institutions across Karnataka, 6 encompassing expert lectures, 3 practical workshops, along with various paper and poster sessions that cultivated a stimulating and collaborative academic atmosphere.

This proceedings volume encompasses the abstracts of scientific papers and poster presentations showcased during the conference. Each submission underwent careful evaluation and systematic compilation to uphold academic integrity and to represent the breadth, depth, and innovation of the research contributions presented.

The meticulous preparation of these proceedings was accomplished through the dedicated stewardship of the Organizing Committee, comprising:

- **Dr. Mohan Thomas Nainan** – Organizing Chairperson
- **Dr. Nirupama D. N.** – Organizing & Scientific Secretary
- **Dr. Vijay R.** – Organizing Co-Secretary
- **Dr. Gangotri Saha** – Scientific Coordinator
- **Dr. Helen Thomas** – In-Charge, Registration & Treasurer
- **Dr. Saurav Gowda** – In-Charge, Hospitality

Their exemplary leadership, strategic coordination, and unwavering commitment, together with the concerted efforts of the organizing team, ensured the seamless conduct of the conference and the successful curation of this scholarly compilation.

MESSAGE FROM THE CHAIRPERSON

It gives me immense pleasure to present the proceedings of the State-Level Conference on **"PRESERVE-PROTECT-PERFORM**-*Biology preserved, function restored and excellence delivered"* The conference witnessed enthusiastic participation and high-quality research contributions.

I sincerely appreciate the efforts of the Organizing Secretary, the organizing & Scientific committee members, volunteers, and interns whose dedication ensured the smooth execution of the conference and compilation of this proceedings book.

We hope this document serves as a valuable academic resource and inspires further research in this domain.

Special appreciation is extended to the **Dr. Nirupama D N (**Organizing & Scientific Secretary**) and team** who provided assistance in abstract formatting, data organization, communication with participants and compilation of this document.

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The conference functioned as a distinguished forum for scholarly discourse, comprising 47 scientific paper presentations and 49 poster presentations that showcased pioneering ideas, novel investigations, and progressive research initiatives. The sessions witnessed remarkable engagement, insightful deliberations, and spirited interaction among participants.

Each presentation underwent rigorous appraisal by an eminent panel of senior academicians from Vydehi Institute of Dental Sciences and other prestigious institutions. To facilitate a systematic and impartial evaluation process, the adjudicating panels were thoughtfully assigned across six lecture halls.

DR. MOHAN THOMAS NAINAN

Organizing Chairperson

PRINCIPAL & HOD, CONSERVATIVE DENTISTRY & ENDODONTICS

VIDS&RC

ABSTRACTS FOR POSTER PRESENTATION HALL 1 SESSION 1 – 1 TO 12

ABSTRACT NO 1

Title: BIOLOGICAL PRE-CONDITIONING OF RESIDUAL DENTIN: An Integrative

Review of Bioactive and Herbal Adjuncts in Post-Caries Management"

Dhananjay Singh Gahlot,Smiley Potakari, Dr Swetha H B

Raja Rajeswari Dental College, Bangalore Karnataka

ABSTRACT

Introduction:

Residual dentin preserved after minimally invasive caries removal represents a biologically active yet structurally vulnerable substrate. Increased permeability, compromised mineral content, and residual microbial activity place this dentin at continued risk, even after restoration. While liners and bases offer mechanical sealing, they do not directly address the biological instability of the underlying dentin. This review highlights the critical need for biologically driven pre-conditioning strategies prior to definitive restorative procedures.

Review:

Available literature on bioactive materials demonstrates their capacity to promote ion exchange,stimulate dentin remineralization, and stabilize the dentin–pulp complex. In parallel, herbal agents exhibit well-documented antimicrobial, anti-inflammatory, and collagen-protective effects on dentinal tissues. Although these approaches have largely evolved independently, their complementary mechanisms suggest a rational, integrative pre-conditioning concept aimed at optimizing residual dentin prior to liner placement and restoration to establish standardized protocols and long-term outcomes.

Conclusion-Biological pre-conditioning of residual dentin using bioactive and herbal adjuncts represents a paradigm shift from passive protection to active dentin stabilization in post-caries management. This integrative approach aligns with contemporary conservative dentistry principles and warrants further clinical validation to establish standardized protocols and long-term outcomes.

Keywords: 1.Residual dentin, 2. Biological pre-conditioning, 3. Bioactive materials, 4. Herbal adjuncts

ABSTRACT NO 2

Title: ENDOCATOR - From Assumption to Accuracy in Endodontic Irrigation

Malavika T,Manjunath, Dr.Keerthan Bollamma

Coorg Institute of Dental Sciences, Virajpet, Karnataka

ABSTRACT

Introduction

Effective root canal therapy depends on thorough irrigation, yet the endpoint of irrigation is often determined subjectively, based on operator experience rather than objective criteria. The Endocator device has emerged as a potential objective indicator to determine completion of canal disinfection by assessing canal cleanliness and fluid characteristics. The device analyzes the luminescence generated by an enzyme cycling method that process the adenosine triphosphate (ATP), adenosine diphosphate (ADP) and adenosine monophosphate (AMP) present in organic residues.

Conclusion

Current evidence suggests that Endocator-based assessment may enhance accuracy in identifying irrigation endpoints compared with conventional subjective judgment.However, heterogeneity in study designs and limited clinical trials restrict definitive conclusions. This review aims to critically analyze available literature on ENDOCATOR and similar indicators, evaluating their scientific basis, clinical relevance, diagnostic accuracy and limitations in improving decision-making during endodontic irrigation.

KEYWORDS: Endocator, Irrigation end point, Root canal disinfection, Clinical decision-making.

ABSTRACT NO 3

Title:VITAL PULP THERAPY: Preserve The Pulp

Yunita Sarkar,Dr. Priyanka

Dayanand Sagar College of Dental Sciences, *Bangalore Karnataka*

ABSTRACT

Vital pulp therapy plays a crucial role in contemporary endodontic practice by emphasizing the preservation of pulp vitality and the biological integrity of the pulp-dentin complex. Aligned with the principles of preserve, protect, and perform, this conservative approach prioritizes conservation of natural tooth structure while ensuring optimal functional outcomes. Although often underutilized, vital pulp therapy significantly influences clinical decision making, longterm tooth survival, and patient centered care. Successful outcomes depend on appropriate case selection and a sound understanding of pulp biology, helping to prevent unnecessary root canal treatment. This poster aims to highlight the principles, indications, and clinical relevance of vital pulp therapy in modern endodontics.

Keywords: Vital pulp therapy; Pulp preservation; Pulp-dentin complex; Pulp vitality.

ABSTRACT NO 4

Title:Herbal Therapy: A Green Strategy Against Antibiotic Resistance In Endodontics

Archit Kumar ,Annie Afra Luvis ,Anshika Kumari, Carol Fernandi, Dr Savitha B Naik

Government Dental College & Research Institute, *Bangalore Karnataka*

ABSTRACT

Microbial infection of the root canal system remains the principal cause of pulpal and periapical diseases, and its proficient control is fundamental to the success of endodontic therapy. Conventional endodontic management, employs mechanical instrumentation supplemented by chemical irrigants, intracanal medicaments, and antibiotics to eliminate microorganisms. However, the increasing prevalence of antibiotic-resistant endodontic pathogens, particularly Enterococcus faecalis and Candida albicans, along with their ability to survive within dentinal tubules and biofilms, has raised concerns regarding the long-term efficacy of conventional antimicrobial strategies. Recent research has emphasized the need for alternative approaches that are both effective and biologically acceptable. Herbal therapy has gained attention as a potential green strategy in endodontics due to its antimicrobial, anti- inflammatory, antioxidant, and biocompatible properties. Various studies have reported promising antimicrobial activity of herbal agents such as Azadirachta indica (Neem), Curcuma longa (Turmeric), Ocimum sanctum (Tulsi), Propolis, and Triphala against common endodontic pathogens, with favourable tissue compatibility when compared to synthetic agents. These phytotherapeutic agents are suggested to act through multiple mechanisms, including disruption of microbial cell integrity and interference with biofilm formation. The growing body of evidence supporting herbal alternatives highlights their potential role as adjuncts in endodontic disinfection protocols. Nevertheless, further scientific validation is essential to establish standardized formulations and clinical applicability. This poster aims to highlight the relevance of herbal therapy in addressing antibiotic resistance and to explore its emerging role in contemporary endodontic practice

ABSTRACT NO 5

Title:Vital Pulp Therapy: A Paradigm Shift from Pulp Extirpation to Pulp Preservation

Asappiya Dani D ,Chaitra A ,Dr Shweta R MDS

KGF College of Dental Science, Kolar Fields, Karnataka

ABSTRACT

Preservation of the natural tooth structure and pulp vitality has become a primary objective in contemporary endodontics. Traditionally, teeth presenting with deep caries or pulp exposure were managed by complete pulp extirpation and root canal therapy. However, advances in understanding pulpal biology and the development of bioactive materials have led to a paradigm shift toward Vital Pulp Therapy (VPT), which emphasizes pulp preservation rather than removal. Vital pulp therapy comprises a group of conservative procedures aimed at maintaining the vitality and function of the dental pulp following carious, mechanical, or traumatic exposure. These procedures include indirect pulp capping, direct pulp capping, partial pulpotomy, and full pulpotomy. The success of VPT depends on accurate case selection, effective control of pulpal inflammation, proper hemostasis,aseptic technique, and an adequate coronal seal.The introduction of bioactive calcium silicate–based materials such as mineral trioxide aggregate (MTA) and Biodentine has significantly improved clinical outcomes by promoting reparative dentin formation, providing superior sealing ability, and enhancing pulp healing. Recent evidence suggests that vital pulp therapy can be successfully performed even in selected cases of symptomatic pulpitis, challenging traditional treatment protocols.The primary goal of vital pulp therapy is to preserve pulp vitality, maintain tooth proprioception, and prolong the functional lifespan of the tooth while minimizing unnecessary removal of tooth structure. This poster highlights the principles, indications, materials, advantages, and limitations of vital pulp therapy, emphasizing its role as a biologically driven and conservative alternative to conventional endodontic treatment in modern dental practice.

Keywords: Calcium silicate–based bioactive materials, Biodentine

ABSTRACT NO 6

Title:Vital Pulp Therapy: Regenerative Pulp Therapy Using Stem Cells

Santosh Kumar K M, Pullalarevu Harshitha Sai,Surabhi N A,Bhoomika S H, Dr.Channesh Patel G S

College Of Dental Sciences, Davanagere, Karnataka

ABSTRACT

Regeneration of dental pulp in mature teeth is challenging due to limited vascular supply, reduced cellularity, and a narrow apical foramen. Conventional endodontic therapy removes diseased pulp but does not restore pulp vitality leading to growing interest in regenerative approaches. Stem cells based pulp regeneration has emerged as a promising biological strategies. Dental derived stem cell such as dental pulp stem cells(DPSCs) and stem cells from the apical papilla (SCAP), when combined with biocompatible scaffolds and bioactive signaling molecules, facilitate regeneration of the dentin-pulp complex. These components promote angiogenesis, neurogenesis and tissue repair. Recent advances tissue engineering, growth factor delivery and cell homing techniques have improve the regenerative outcomes even in mature teeth.

Conclusion: Although early clinical and pre-clinical studies show encouraging results challenges related to stem cell immune response and long-term stability remain. Further controlled clinical trials are required to establish predictable clinical application.

Keywords: Stem cells, Scaffold, Cell technique, Tissue engineering

ABSTRACT NO 7

Title:From Plants to Pulp: Herbal Irrigants in Dentistry

Dr Subhashini V,Dr. Rashmi N

M R Ambedkar Dental College and Hospital, *Bangalore Karnataka*

ABSTRACT

Background: Successful root canal treatment relies heavily on the complete elimination of microbes and debris from the complex root canal system, which mechanical instrumentation alone cannot achieve. Irrigants are essential for disinfection and tissue dissolution. However, a single, ideal irrigating solution remains elusive.

Clinical implications: Conventional chemical root canal irrigants has significant drawbacks related to tissue toxicity, impact on dentin structure and chemical interactions. Preservation of the root dentin micro hardness during the biomechanical preparation is essential to maintain the structural integrity of the tooth. Conventional irrigants are proven to cause significant demineralization and reduction in dentin micro hardness when used repeatedly or for prolonged durations. Studies have confirmed that herbal root canal irrigants show promising antimicrobial activity with better biocompatibility and lesser toxicity and adverse effects compared to conventional irrigants. Combining irrigants and using them sequentially will assist to meet all of the requirements for irrigation of the root canal, which will result in successful root canal therapy.

Conclusion: Herbal root canal irrigants act as safer alternatives to harsh conventional chemical root canal irrigants.

Keywords: Herbal root canal irrigants, Biocompatible, Antimicrobial, Toxicity, Root dentin Microhardness.

ABSTRACT NO 8

Title:Role of Graphene in Dentistry: Transforming the Future of Oral Healthcare

Dr. Malika Mariam,Dr. Rashmi N

M R Ambedkar Dental College and Hospital, *Bangalore Karnataka*

ABSTRACT

Introduction:

Graphene and its derivatives have emerged as promising nanomaterials in conservative dentistry and endodontics due to their superior mechanical strength, antimicrobial activity,biocompatibility, and regenerative potential. These properties address key challenges such as microleakage, bacterial persistence, and material failure.

Clinical Case: In conservative dentistry, graphene incorporation into restorative materials and glass ionomer cements enhances microhardness, wear resistance, and antibacterial properties without compromising esthetics or setting characteristics. In endodontics, graphene oxide–based sealers exhibit improved dentin bonding, reduced micropenetration, and potent antimicrobial action against resistant species like Enterococcus faecalis. Graphene-enhanced irrigants and intracanal medicaments demonstrate effective disinfection with lower cytotoxicity, while graphene- modified materials promote dental pulp stem cell proliferation and periapical tissue regeneration

Conclusion:Graphene-based materials offer significant advancements in conservative and endodontic dentistry by improving antimicrobial efficacy, material durability, and biological healing Further clinical studies are required for long-term validation and routine clinical adoption.

Keywords: Enterococcus faecalis, graphene, restorative materials, nano-particles, root canal sealant

ABSTRACT NO 9

Title:Artficial Intelligence in Endodontic Treatment: a literature review

Likhitha Anand, Sandeep Kolla, Dr. Shruthi Nagaraj

MS Ramaiah University of Applied Sciences- Faculty of Dental Sciences,*Bangalore Karnataka*

ABSTRACT

Introduction:

Artificial Intelligence (AI) refers to computer-based systems that can analyze data and assist in decision-making. In endodontics, AI is increasingly used to improve diagnosis, treatment planning, and overall success of root canal therapy.

Why AI in Endodontics:

Endodontic procedures are often difficult due to complex root canal anatomy, variations in radiographic interpretation, and operator-related errors. Missed canals are a major cause of endodontic failure. AI helps reduce these errors by providing accurate and consistent analysis.

Applications:

AI is widely used in detecting periapical lesions, identifying root canal anatomy, determining working length, detecting complications such as resorption and fractures, and predicting treatment outcomes. It also supports endodontic education and clinical training.

Conclusion:

Artificial Intelligence acts as a supportive tool in endodontics, improving diagnostic accuracy, treatment efficiency, and clinical outcomes. Although it cannot replace the clinician, AI plays an important role in achieving more accurate, predictable and patient-centered endodontic care.

Keywords: Artificial Intelligence; Endodontics; Treatment; Accuracy.

ABSTRACT NO 10

Title: Regenerative Endodontics - From Necrosis To New Life

Soniya.U , Sushmitha.S ,Varsha.S, Dr.Veena Pai S

The Oxford Dental College ,*Bangalore Karnataka*

ABSTRACT

Regenerative endodontics is an emerging biologically based treatment approach aimed at restoring the structure and function of the pulp-dentin complex in immature permanent teeth. Unlike conventional root canal therapy, which focuses on disinfection and obturation, regenerative endodontic procedures promote tissue regeneration by utilizing the principles of tissue engineering: stem cells, scaffolds, and signaling molecules.

Dental stem cells derived from the apical papilla, periodontal ligament, or bone marrow play a crucial role in pulp regeneration.

Scaffolds such as blood clot, platelet-rich fibrin, collagen, and synthetic hydrogels provide a three-dimensional framework to support cell growth and differentiation.

Growth factors released from dentin and platelet concentrates guide cell proliferation and angiogenesis.

Clinically, regenerative endodontics offers advantages including continued root development, increased dentinal wall thickness, and improved fracture resistance. Despite promising outcomes, challenges such as unpredictable tissue formation and long-term prognosis remain, necessitating further research and standardization of protocols. This poster depicts all aspects of regeneration with an note on newer developments along with a case report of this procedure done with our senior in the department.

ABSTRACT NO 11

Title:Regenerate, Restore, Rebuild: Biomimetic Dentistry in Action

R Dheeraj Kumar, Yashila A, Dr. Swetha Mahesh

Raja Rajeshwari Dental College and Hospital, *Bangalore Karnataka*

ABSTRACT

Biomimetic dentistry is all about nature-inspired strategies to conserve tooth structure, enhance restoration durability, and promote biological function. This field focuses on physical, chemical, and mechanical characteristics of natural tissues while restoring and regenerating teeth. The idea to use smart materials like bioactive glass, glass ionomer cements, or special composite resins that has self-healing capacity. These materials give better biocompatible, improved sealing, regenerative capacity, and antibacterial properties compared to traditional restorative substance. Recent developments includes stress-reducing preparation techniques and advanced adhesives that preserve tooth integrity. In regenerative dentistry, biomimetic method stimulates dentin remineralisation and pulp-dentin complex using nano-precursors and bioactive agents. In contrast to traditional restorative techniques that rely on rigid, inert materials, biomimetic approaches advanced materials to mimic the mechanical, chemical and physical characteristics of natural dental tissues, thereby preserving integrity and vitality. These materials only provide superior sealing and strength but also facilitate dentin remineralisation and stimulation of pulp-dentin complex repair through nano-precursors bioactive agents. The ultimate goal is to replace traditional, non-responsive material with biologically interactive systems that facilitate natural tissue repair and long term clinical success.

Conclusion: Biomimetic dentistry promise transformative improvements in dental restoration and regeneration.

Keywords: Biomimetic Dentistry; Nano-precursors; Restoration; Regeneration

ABSTRACT NO 12

Title:NATURE'S BLUEPRINT: THE RISE OF BIOMIMETIC DENTISTRY

Aamir Pasha, Hibbha Mansoor, Syed Zaid, Shaistha Naaz ,Dr. Khaja Iftheqar Ahmed

Sri Rajiv Gandhi College of Dental Science and Hospital, *Bangalore Karnataka*

ABSTRACT :Utilizing a biomimetic strategy, dental restorations are designed to replicate the structure and function of natural teeth. A biomimetic restoration does not simply restore the lost structure of a tooth; it seeks to mimic the physical, mechanical and biological properties of enamel, dentin and the Dentino-pulpal Complex, thereby supporting the longevity of the Restoration and the preservation of natural tooth structure. Utilising biomimetic principles allows the dentist to design Restorations that function like natural teeth by reducing stress through the use of adhesive bonding and by creating a durable bond between the dentin and enamel. Enhancing the ability to support long-term Remineralization and Repurposed tissue repair will improve the performance of the restorations and decrease the likelihood of Marginal fracture or failure. The principles and concepts of Biomimetic Dentistry include; Maximally conserving sound tooth structure; Stress-reducing adhesive bonding; Creating a stable dentin-enamel bond; and Encouragement of Natural Remineralization and tissue repair. These principles allow for the functioning of Restoration materials similar to natural teeth, allowing the functional stresses from the restoration to be distributed evenly throughout the tooth, thereby decreasing the possibility of failure. The use of a variety of biomimetic materials provides a basis for implementing biomimetic dentistry. As an example, Biomimetic Resin Composites have been designed to have mechanical properties and elastic properties similar to Dentin and Enamel while providing excellent adhesive bonding. Yet another Example of a biomimetic material is Biodentin, a calcium silicate Based Bioactive that has been developed to replace Dentin by promoting mineralisation, healing of the pulp and Stimulating the formation of reparative dentin. Casein phosphopeptide – amorphous calcium phosphate (CPP-ACP), will supplant many of the current remineralizing agents, providing a supplier of bioavailable calcium and phosphate ions to enhance the repair process of early enamel and dentin lesions.

Through the integration of biomimetic principles and materials, modern dentistry is able to provide restorations that are functional, biologically compatible, and closely resemble natural tooth tissues.

KEYWORDS: Principles of biomimetic dentistry; Restoring the natural function of the teeth; Use of new and advance materials, CPP-ACP

ABSTRACTS FOR POSTER PRESENTATION HALL 1 SESSION 2 – 1 TO 12

ABSTRACT NO 1

Title:Vital pulp therapy: Prioritising Life over Loss

Ameena Rahath F , Meghana H , Spandana U ,Dr.Alan Winston D

College of Dental Sciences, Davangere, Karnataka

ABSTRACT

Preservation of pulp vitality has become a primary goal of contemporary restorative dentistry, leading to significant advancements in pulp therapy. Traditional materials and techniques are now being supplemented or replaced by biologically driven and minimally invasive approaches aimed at enhancing healing and regeneration of the dentin-pulp complex. Platelet Fibrin Matrix (PFM) has emerged as a promising autologous biomaterial due to its rich concentration of growth factors, which promote angiogenesis, cell proliferation, and accelerated pulp healing. Laser-assisted pulp therapy offers precise tissue ablation, superior hemostasis, effective disinfection, and reduced postoperative inflammation, thereby improving clinical outcomes in procedures such as pulpotomy.Biological mediators play a pivotal role in regenerative pulp therapy. Bone Morphogenic Proteins (BMPs) stimulate odontoblastic differentiation and reparative dentin formation, malting them valuable in vital pulp procedures. Nitric oxide, a multifunctional signaling molecule, contributes to antimicrobial activity, modulation of inflammation, and enhanced vascular response within the pulp tissue. Additionally, chitosan-collagen scaffolds have gained attention for their biocompatibility, biodegradability, and ability to support cell adhesion and tissue regeneration. These scaffolds act as ideal carriers for bioactive molecules, creating a favorable microenvironment for pulp repair.Collectively, these advancements signify a paradigm shift :from conventional pulp capping toward regenerative and bioactive therapies. Integration of biomaterials, growth factors, and laser technology has improved the predictability and success of pulp therapy. Continued research and clinical validation are essential to standardize these approaches and establish long-tenn outcomes, ultimately promoting tooth preservation and pulp vitality.

Keywords: Vital pulp therapy,regeneration, bioactive materials, lasers, regenerative dentistry.

ABSTRACT NO 2

Title: Freeze the lesion: innovative ways to arrest dental caries.

Nidhi P Dhulehole, Dr Ambika Kumari

College of Dental Sciences, Davangere, Karnataka

ABSTRACT

Introduction:

Dental caries is one of the most prevalent chronic diseases worldwide, affecting individuals across all age groups. Traditionally, caries management relied on mechanical removal of decayed fissue and restorative procedures. However, recent trends show a paradigm shift toward non-invasive and minimally invasive strategies aimed at arresting or reversing early carious lesions.

Emphasis is now placed on caries risk assessment, salivary diagnostics, and personalized preventive care.

Innovations in fluoride delivery systems, including high-concentration fluoride varnishes, slow-release devices, and silver diamine fluoride (SDF), have proven effective in arresting active lesions and preventing demineralization. SDF is particularly valuable due to its antimicrobial and remineralizing properties and cost-effectiveness for high-risk patients.

Advances in biomimetic remineralization agents such as casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) and bioactive glass support enamel and dentin repair. Emerging therapies like probiotics and digital caries detection technologies enable early diagnosis, promote preventive care, and help preserve tooth structure, marking a shift from restorative to preventive caries management.

KEYWORDS: Minimal innovative dentistry, Caries risk management,Silver diamine fluoride,Biomimetic remineralization

ABSTRACT NO 3

Title: SAVE THE X- ARTICULATED

Gowtham T, Vyshnavi PP,Dr. Keerthan Bollamma

Coorg Institute of Dental Sciences, Virajpet, Karnataka

ABSTRACT

An avulsed tooth is one of the few real emergencies in dentistry: Prompt and correct emergency management is essential for attaining the best outcome after this injury. It is important not only that the dentist understands how to treat this injury but also that other healthcare providers, parents, and teachers know how to deal with these types of injuries to help achieve the best possible outcome and prognosis.

Conclusion: This poster highlights the current best evidence and practice based on the literature search and expert opinions to discuss measures to be taken immediately in case of dental avulsion and its further management clinically.

Keywords: Avulsion, dental emergency, prognosis

ABSTRACT NO 4

Title: Ergonomics: Your Silent Partner in Dental Excellence - Align, Apply, Achieve

ANSHU SINHA, Dr. Lipika Jain

Dayananda Sagar College of Dental Sciences, *Bangalore Karnataka*

ABSTRACT

In the pursuit of clinical perfection, the physical well-being of the clinician is often overlooked. Conservative Dentistry and Endodontics demand microscopic precision, prolonged static postures, and repetitive fine motor movements. As a silent partner in clinical practice, ergonomics integrates clinician's health with precision, preservation, and long term clinical performance. Poor posture, repetitive strain, and inadequate operatory design not only compromises clinician's health, but also adversely affects the treatment accuracy, longevity, and patient outcomes. Dental clinicians have a significantly higher risk and prevalence of musculoskeletal disorders like carpal tunnel syndrome and back pain due to repetitive, forceful tasks, awkward postures, and prolonged static positions. By focusing on the triad of Align, Apply, and Achieve, we mirror the core conference philosophy of Preserve, Protect, and Perform. Align = Establish a stable ergonomic foundation through correct posture, Apply = Integrate clinical practices using magnification and smart operatory design, Achieve = Deliver precise, efficient and optimal outcomes.

Keywords: Musculoskeletal disorders; Magnification Loupes; Occupational Health; Clinical Precision.

ABSTRACT NO 5

Title: The Regrowth Revolution: giving immature tooth a future

Arwa Mufaddal Kachwala ,Sucheta Das, Soha Seher,Sahana D Gowda, Dr.Shivani Hegde

Dayananda Sagar College of Dental Sciences, *Bangalore Karnataka*

ABSTRACT

Saving a child's young tooth when it loses its vitality is one of the most rewarding parts of our work. In the past, our options were quite limited-we essentially just sealed the end of the root to close it off. But today, regenerative endodontics has completely changed the game. It's not just about closing a space anymore; it's about actually encouraging the tooth to heal and grow again.

The magic lies in the body's own resources. At the tip of an immature root, there are special cells with incredible potential. Our job is to gently clean the inside of the tooth, using very mild solutions, to protect these precious cells. Then, we carefully prompt a small amount of bleeding into the space. This blood clot isn't a problem-it's the perfect natural scaffold. Think of it as a nurturing "nest" where new tissue can form and flourish.

For the child, this means something wonderful: the root can continue to lengthen, and the walls of the tooth can thicken, making it much stronger. We're not placing an inert filler; we're kick-starting the body's own repair system. We then seal it with a bioactive material that supports this healing.

Ultimately, this approach moves us far beyond a simple fix. It's not just a filling; it's a second chance for a healthy smile

KEYWORDS: Stem Cells from Apical Papilla (SCAP), Immature Permanent Tooth, Bioactive Scaffold, Root Development

ABSTRACT NO 6

Title: Byte By Byte: How Cloud Computing Is Reshaping Dentistry

Neha,Mahek,Lekshmi,Sarah ,Dr. Biji Brigit

Government Dental College & Research Institute, *Bangalore Karnataka*

ABSTRACT

Cloud computing is an innovative digital model that provides on-demand access to shared computing resources, enabling efficient data storage, processing, and retrieval with minimal service-provider interaction. In conservative dentistry and endodontics, where clinical decision making increasingly relies on digital imaging and workflow integration, cloud computing offers a cost-effective, secure, scalable, and low-maintenance solution.

Modern conservative and endodontic practice generates large volumes of digital data, including intraoral radiographs, cone-beam computed tomography (CBCT), intraoral scans, digital impressions, three-dimensional restorative and endodontic models, veneer and crown designs, and comprehensive treatment records. Cloud-based platforms enable secure storage and permanent archiving of both two-dimensional and three-dimensional datasets, with the flexibility to expand storage and computational capacity according to clinical requirements.

Beyond radiographic data management, cloud computing facilitates seamless integration of digital workflows by allowing clinicians to access, analyze, and modify intraoral scans, CAD/CAM restorative designs, veneer planning models, and endodontic documentation from multiple locations. These systems support real-time collaboration between conservative dentists, endodontists, prosthodontists, dental laboratories, and radiologists, thereby enhancing interdisciplinary treatment planning, remote consultations, and efficient case referrals.

By improving accessibility, workflow efficiency, data security, and collaborative decision-making, cloud computing has the potential to enhance diagnostic accuracy, treatment planning, clinical outcomes, and patient-centered care in conservative dentistry and endodontics. This review highlights the characteristics, deployment models, advantages, limitations, regulatory considerations, and future scope of cloud-based systems, with emphasis on their role in digital imaging, restorative design, and comprehensive digital workflow integration.

ABSTRACT NO 7

Title: The Rise of Smart Restorative Materials in Dentistry

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ABSTRACT

Smart restorative materials represent an important advancement in restorative dentistry by integrating stimulus-responsive behaviour with the fundamental functions of conventional dental restoratives. Unlike traditional inert materials that primarily replace lost tooth structure, smart biomaterials are designed to sense and respond to dynamic oral environmental conditions such as pH fluctuations, mechanical stress, temperature variations, and chemical stimuli. This review provides a comprehensive overview of smart restorative materials, beginning with the essential criteria for an ideal restorative material and tracing the historical evolution of dental restoratives from early natural substances to modern composite systems.

The growing global burden of dental caries and the high incidence of restoration failure emphasize the urgent need for intelligent materials capable of adapting to complex oral environments. Smart restorative materials address these challenges by offering enhanced antibacterial activity, remineralization potential, self-healing capacity, and improved longevity of restorations. Based on their level of responsiveness, smart biomaterials are classified as inert, active, reactive, or autonomous systems. Each category exhibits distinct mechanisms of interaction with the surrounding tissues and oral environment.

Major classes of smart restorative materials—including nanocomposites, hydrogel-based materials, smart carrier systems, composite resins, and ceramic-based restoratives—are discussed with respect to their functional properties and clinical relevance. In addition, current limitations, technical challenges, and barriers to clinical translation are highlighted. Overall, smart restorative materials demonstrate significant promise in enabling personalized, preventive, and biologically interactive dental treatments, representing a paradigm shift from passive restoration toward intelligent therapeutic dentistry

Keywords: Smart restorative materials, nanocomposites, hydrogel, smart carrier systems

ABSTRACT NO 8

Title:Beyond Sugar: Exploring The Role Of The Diet In Dental Caries”

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K.L.E Society’s Institute of Dental Sciences, *Bangalore Karnataka*

ABSTRACT

INTRODUCTION:

Dental caries remains the most prevalent non-communicable disease worldwide despite significant advancements in preventive and restorative dentistry. Among the various etiological factors involved, diet plays a pivotal and modifiable role in the initiation and progression of dental caries.

This paper aims to review the critical role of diet in dental caries pathogenesis, with particular emphasis on the type, frequency, and physical form of dietary carbohydrates. Fermentable carbohydrates, especially sucrose, act as substrates for acid production by cariogenic microorganisms and facilitate the synthesis of extracellular polysaccharides, enhancing plaque adhesion and cariogenicity. The Stephan curve demonstrates the rapid fall in plaque pH following sugar intake and highlights the importance of salivary buffering in preventing enamel demineralization. Evidence from classical studies such as the Vipeholm study underscores that frequent consumption of retentive carbohydrates is more detrimental than the total quantity consumed.

In contrast, certain dietary components such as dairy products, sugar alcohols like xylitol, polyphenols, and high-fiber foods exhibit protective effects by promoting remineralization, reducing bacterial activity, and enhancing salivary flow. Understanding these dietary influences allows for effective preventive strategies through dietary modification and patient education.

In conclusion, diet is a key determinant in caries development and prevention. Incorporating dietary counseling into routine dental practice is essential for effective caries management and long-term oral health maintenance.

KEYWORDS:

1. DENTAL CARIES 2. DIET 3.STEPHAN’S CURVE 4.CARIES PREVENTION

ABSTRACT NO 9

Title:Endodontic Microbiology

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ABSTRACT

Endodontic microbiology focuses on the microbial etiology of pulpal and periradicular diseases, primarily driven by polymicrobial infections in necrotic root canals. Bacteria predominate, forming complex biofilms that resist conventional disinfection, with key species varying between primary infections (anaerobes like Porphyromonas and Fusobacterium) and persistent post-treatment cases (facultatives like Enterococcus faecalis). Future strategies emphasize targeting biofilms and microbial interactions for improved outcomes.

Microbial Composition:Root canal infections typically involve over 500 bacterial species, but a core microbiome of 20-30 species dominates, including Prevotella, Fusobacterium, Streptococcus, and Parvimonas in primary apical periodontitis.Post-treatment failures shift toward Gram-positive facultatives and E. faecalis, which survives high NaOCl concentrations and invades dentinal tubules.

Fungi like Candida albicans and archaea play minor roles, with high interindividual variability .

Biofilm Dynamics

Bacteria in endodontic infections form multispecies biofilms on root canal walls, enhancing virulence through co-aggregation and resistance to antimicrobials. Fusobacterium nucleatum acts as a bridge species, linking early colonizers to late anaerobes, while Streptococcus mutans produces adhesins for plaque formation. These structures spread infection to lateral canals and isthmuses, complicating eradication.

Clinical Implications :Understanding microbial ecology guides irrigation (e.g., NaOCl, CHX) and retreatment protocols, yet persistence underscores the need for advanced diagnostics like molecular sequencing. Biomarkers from gingival sulcus may enable non-invasive detection of secondary infections. Research highlights bacterial synergies as the true pathogenicity unit, informing targeted therapies.

Keywords: root canal infections, polymicrobial biofilms, microbial dynamics, endodontic failure, disinfection strategies

ABSTRACT NO 10

Title:Proximal Shaping Success:Innovation In Matrix Systems For Direct Restorations

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ABSTRACT

The success of direct restorative procedures in conservative dentistry is heavily influenced by the design and application of matrix systems. Matrix bands and retainers play a pivotal role in achieving proper form, function, and contact points while preventing overhangs and ensuring periodontal health. This abstract reviews recent advancements in matrix technologies for both amalgam and composite restorations. The use of matrix systems is fundamental in achieving

successful direct restorations by establishing proper proximal contacts , anatomical contour and marginal adaptation .Innovations such as pre-contoured sectional matrices with separation rings, anatomically shaped bands, and advanced flexible matrices have enhanced adaptability to tooth

morphology, improved contact formation, and reduced chair-side time. In composite restorations, transparent matrices and novel matrix insertion techniques support light curing efficiency and resin adaptation, reducing polymerisation stress and improving marginal integrity. Additionally, new retainer-less systems and matrix wedges have demonstrated improved gingival sealing and minimised. The development of pre contoured and elastic matrix bands has further simplified application and improved marginal integrity and reduced overhangs .These advancements contribute to predictable restorative outcomes, optimised proximal contours, and enhanced longevity of restorations dentistry.

Conclusion- Recent advancements in matrix systems have significantly improved the quality and predictability of amalgam and composite restorations in conservative dentistry. Modern matrix designs, including pre-contoured sectional matrices, separation rings, transparent matrices, and retainer-less systems, have addressed the limitations of conventional matrix bands by enhancing adaptability, proximal contact formation, and anatomical contouring. These innovations have contributed to improved marginal integrity, reduced overhangs, better gingival adaptation, and increased longevity of restorations. Overall, the integration of advanced matrix systems has simplified restorative procedures, reduced chair-side time, and improved clinical outcomes.

Keywords: Proximal Contact Establishment; Sectional Matrix System; Anatomical Contour Accuracy

ABSTRACT NO 11

Title : Beyond conventional Repair

Esha Vikram Jain , S M Aamilah , Simran C Sanikop , Yashaswini Rajaram,Dr Ashwini P

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ABSTRACT

Preservation and reinforcement of dentin are critical for the long-term success of restorative and endodontic procedures. Conventional remineralisation strategies often result in superficial mineral deposition and fail to restore the intrinsic mechanical properties of demineralised dentin. Biomimetic remineralisation represents a biologically driven approach that aims to replicate the natural process of dentin mineralisation.

The objective of this study was to evaluate the potential of biomimetic remineralisation in restoring demineralised dentin through guided intrafibrillar mineral deposition. The mechanism involves the stabilisation of amorphous calcium phosphate nanoprecursors and their interaction with collagen fibrils, mimicking the role of non-collagenous proteins during physiological dentin mineralisation.

Biomimetic remineralisation demonstrated effective intrafibrillar mineral deposition within the collagen matrix, leading to improved structural integrity and enhanced mechanical properties of dentin. This approach enables deeper mineral penetration compared to conventional remineralisation methods and contributes to increased resistance against degradation.

Biomimetic remineralisation offers a promising strategy for dentin repair by imitating natural mineralisation mechanisms. Its potential to restore dentin strength and improve the longevity of restorative and endodontic treatments highlights its future clinical relevance.

Keywords: Biomimetic remineralisation; Dentin repair; Intrafibrillar mineralisation; Endodontics

ABSTRACT NO 12

Title : Bio-Engineered Teeth

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ABSTRACT

Conventional tooth replacement modalities such as dental implants and fixed prostheses successfully restore function but fail to replicate the biological characteristics of natural teeth, including periodontal ligament function, proprioception, and physiological bone remodeling. These limitations have prompted a paradigm shift in dentistry toward biologically driven regeneration, leading to the development of bioengineered teeth.

Objectives To evaluate the concept, methodology, and regenerative potential of bioengineered teeth as a biological alternative to conventional tooth replacement therapies.

Methods Bioengineered tooth development is based on the tissue engineering triad comprising stem cells, scaffolds, and growth factors. Dental-derived stem cells including dental pulp stem cells, stem cells from the apical papilla, periodontal ligament stem cells, stem cells from exfoliated deciduous teeth, and induced pluripotent stem cells are utilized for their odontogenic, vascular, and neural differentiation potential. These cells are combined with biocompatible three-dimensional scaffolds, while molecular signaling pathways such as bone morphogenetic proteins, fibroblast growth factors, Wnt, and Sonic Hedgehog regulate tooth morphogenesis, angiogenesis, and innervation

Results Preclinical studies have demonstrated successful formation of tooth-like structures exhibiting dentin-pulp complex development, periodontal ligament formation, vascularization, innervation, eruption, and functional occlusal integration. Bioengineered teeth showed improved physiological load distribution, alveolar bone preservation, and proprioceptive function compared to conventional implants.

Conclusion Bioengineered teeth represent a promising advancement in regenerative dentistry by enabling biological tooth replacement rather than mechanical substitution. Although clinical application remains experimental, ongoing progress in stem cell biology, biomaterials, and biofabrication suggests that bioengineered teeth may become a viable and predictable clinical reality in the future.

Keywords: Bioengineered teeth; Regenerative dentistry; Dental stem cells; Tissue engineering

ABSTRACTS FOR POSTER PRESENTATION HALL 2 SESSION 1 – 1 TO 12

ABSTRACT NO 1

Title: The Biology Beyond The Canal- Systemic Influence In Endodontics

Ayushi, Dr. Rupali Karale

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ABSTRACT

Introduction:Endodontic pathology reflects a dynamic interplay between microbial infection and systemic host factors.Systemic diseases such as diabetes, cardiovascular disorders, sickle cell disease, endocrine disturbances, hematologic conditions, and genetic syndromes significantly affect pulpal vitality and periapical healing. Diabetes is associated with early pulp necrosis, severe apical periodontitis, and delayed healing due to microvascular and immune impairment. Sickle cell disease causes pulpal ischemia, asymptomatic necrosis, and persistent periapical lesions, even in intact teeth. Cardiovascular conditions may alter pulpal blood flow and mimic odontogenic pain, requiring careful diagnostic evaluation and cautious use of vasoconstrictors and electrical devices. Genetic syndromes such as Klinefelter syndrome contribute to altered root morphology and complex canal anatomy, demanding individualized endodontic management.

Conclusion:Understanding the systemic–endodontic link is critical for accurate diagnosis, treatment modification, and predictable healing. Systemic diseases alter pulpal blood flow, immune response, canal morphology, and periapical repair, necessitating personalized endodontic strategies. This review poster highlights improved outcomes with modified diagnostics, cautious device use, tailored materials, and extended follow-up in medically compromised patients. Incorporating systemic health transforms endodontic care into a truly patient-centric and interdisciplinary approach.

Keywords: Systemic conditions, Pulpal response, Healing, Endodontic decision making

ABSTRACT NO 2

Title: Role of Artificial Intelligence and Machine Learning in Conservative Dentistry and Endodontics

Darshana Sunil Das,Anjali Suresh Kumar,Dr. Keerthan Bollamma

Coorg Institute Of Dental Sciences,Virajpet, Karnataka

ABSTRACT

Introduction:

Artificial intelligence (AI) and machine learning (ML) are transforming conservative dentistry and endodontics by enhancing diagnostic accuracy, treatment planning, and procedural outcomes. These technologies analyse radiographic images, predict disease progression, and automate restorative design, reducing errors and improving patient care. Future research should prioritize multi-centric trials, integration with real-time clinical workflows, and ethical AI frameworks to fully embed these technologies in everyday conservative dentistry and endodontics practice.

Conclusions

Despite challenges such as data limitations, ethical concerns, and algorithm transparency, collaborative advancements may enable AI-driven, precise, and patient-centred dental care. This poster reviews recent advancements, highlighting AI-driven tools like convolutional neural networks (CNNs) for caries detection and root canal morphology identification.

Keywords: AI-driven tools, Machine learning.

ABSTRACT NO 3

Title: Heal, Don't Just Drill

Abiya Fathima Sohail,Aishwarya.S,Zeba Fathima,Chaithanya A,Dr.Nischita.A

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ABSTRACT

Dental caries, commonly known as tooth decay or cavities, is one of the most prevalent Ongoing, long-term oral health conditions seen globally, affecting all ages; therefore, care should be taken that, in the process of removal of caries, we do not make the tooth structure fragile and preserve as much of the natural dental structures as possible. This can be achieved by minimal intervention in the management of dental caries. Procedures such as Laser Tooth Preparation, Chemo mechanical Caries Removal, and ART can be used to achieve minimal intervention in the treatment of Dental Caries. Laser tooth preparation offers a reduction in vibration, decreased pain, and enhanced patient comfort. Chemo mechanical Caries Removal provides selective removal of carious dentin using chemical agents that soften only the infected tissue, allowing for its gentle removal. Atraumatic Restorative Treatment (ART) is a minimal intervention procedure designed for use in locations without electricity or sophisticated dental equipment. It involves removing carious tissue using only hand instruments. The above procedures help in preserving the tooth structure by removing as minimal amount of dental structure as possible, thereby retaining tooth integrity and not hindering in its function.

Keywords: Preservation, Management, Intervention

ABSTRACT NO 4

Title: TRITONA: Novel innovation for Optimistic Disinfection

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ABSTRACT

Root canal therapy aims to eradicate the microbes from the root canal and further prevent reinfection. Root canal irrigation is crucial for eliminating the smear layer, necrotic tissue,bacteria, and their metabolites.Sodium hypochlorite (NaOCI) is the most frequently used irrigation solution however, its action is limited to the removal of the organic component of the smear layer when used alone.

Thus, chelating agents, such as ethylenediaminetetraacetic acid (EDTA), are used in combination with NaOCl for the removal of the inorganic component, the alternating use of NaOCl and EDTA should be avoided as this reduces the antibacterial effect of NaOCI and may result in dentine erosion.

The concept of continuous chelation has been introduced to combine the advantages of NaOCI with those of chelating solutions to remove inorganic debris while disinfecting and dissolving organic tissues Triton (Brasseler, USA),is a newer all-in-one endodontic irrigant created by mixing two components, part A and part B, just before using. Part A includes proprietary mild chelator like Butanetricarboxylic acid, citric acid, surfactants, stabilizers, whereas Part B contains 8% NaOCl and pH modifiers. Triton is the first irrigant to deliver all of the benefits of NaOC1,EDTA, and Chlorhexidine in a single-step all-in-one irrigation solution.

This Review paper aims in doing an extensive search on literature material on platforms including PubMed, Google Scholar and Journals to assess is Efectivenes, pH, Cytotoxicity , Physicochemical and Biological properties, its effect on smear layer, microbial flora and also compare the parameters with conventional irrigation systems

Keywords: Continuous chelation, Endodontic irrigant, Triton

ABSTRACT NO 5

Title: SMARTER MATERIALS,SMILES : BIOACTIVE MATERIALS

Sai Priyatham AV ,Lakshita S,Dr .Rupali Karale

KLE Society's Institute of Dental Sciences, *Bangalore, Karnataka*

ABSTRACT

Introduction:Advancements in restorative dentistry have led to the development of bioactive materials that move beyond passive tooth replacement to actively interacting with the oral environment. These materials are designed to release beneficial ions, enhance remineralization, improve marginal integrity, and support the health of the tooth–restoration interface.

Objective:To emphasize the concept, mechanism of action, and clinical significance of bioactive materials in achieving durable and biologically compatible dental restorations.

Conclusion:Bioactive materials represent a smarter approach to restorative dentistry by integrating biological activity with functional restoration. Their appropriate selection and application contribute to enhanced tooth preservation,reduced secondary caries, and improved patient outcomes—supporting the concept of smarter materials for smarter smiles

Keywords:Bioactive materials, remineralization, ion release, restorative dentistry, smart dental materials.

ABSTRACT NO 6

Title:Minimally Invasive Endodontics: Preserving Tooth Structure for Long-Term Clinical Success

Angel Sharon ,Javisha Roshan J,Dr Shweta R MDS

KGF College of Dental Science, Kolar Fields, Karnataka

ABSTRACT

Endodontic treatment aims not only at eliminating infection but also at preserving the natural tooth for long-term function. Traditional endodontic procedures often involved extensive removal of tooth structure, which could compromise the strength and longevity of the tooth. In recent years, the concept of Minimally Invasive Endodontics (MIE) has emerged as a paradigm shift that emphasizes conservation of tooth structure while maintaining effective disinfection and obturation.

Minimally invasive endodontics focuses on preserving peri cervical dentin, maintaining original canal anatomy, and reducing procedural errors. This approach integrates conservative access cavity designs, use of magnification, advanced imaging techniques such as cone-beam computed tomography, and the adoption of flexible nickel-titanium rotary instruments. Modern irrigation protocols and activation techniques further enhance canal disinfection without excessive dentin removal. Advances in obturation materials and adhesive restorations also contribute to reinforcing the remaining tooth structure after treatment.

The primary objective of minimally invasive endodontics is to improve fracture resistance and increase the long-term survival of endodontically treated teeth. By balancing adequate canal debridement with structural preservation, this approach supports biologically sound and mechanically durable outcomes. However, careful case selection and clinical judgment are essential to avoid compromising canal cleanliness and treatment success.

This poster aims to highlight the principles, clinical strategies, advantages, and limitations of minimally invasive endodontics, emphasizing its relevance in modern dental practice. Understanding and implementing minimally invasive concepts can help clinicians achieve predictable endodontic outcomes while preserving the natural tooth structure to the greatest extent possible.

Keywords: Durable Outcomes, Modern Dental Practice, Preserving Natural Tooth

ABSTRACT NO 7

Title: Bioactivity In Conservative Dentistry: Materials that Interact, Repair and Regenerate

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College of Dental Sciences,Davanagere , *Karnataka*

ABSTRACT

Introduction:Bioactive materials represent a major advancement in conservative dentistry by enabling restorative procedures that support both structural repair and biological healing of dental tissues. Unlike conventional restorative materials that remain inert, bioactive materials actively interact with enamel and dentin, promoting remineralization and maintaining pulp vitality. These materials release therapeutic ions such as calcium, phosphate, and fluoride, which aid in dentin bridge formation, reduce postoperative sensitivity, and enhance the sealing ability of restorations. Commonly used bioactive materials in conservative dentistry include calcium hydroxide, glass ionomer cements, resin-modified glass ionomers, bioactive glass, and calcium silicate-based materials such as mineral trioxide aggregate (MTA), irrot BP, Bioaggregate, Theracal, Doxadent, Ceramir and biodentine. Their clinical applications include direct and indirect pulp capping, liners and bases, management of deep carious lesions, and minimally invasive restorative procedures. The antibacterial properties and biocompatibility of bioactive materials contribute to long-term clinical success and improved patient outcomes. With increasing emphasis on tissue preservation and regenerative approaches, bioactive materials play a pivotal role in modern conservative dentistry, making them an essential component of contemporary dental practice.

Keywords: Bioaggregate, Indirect pulp capping, biological healing, pulp vitality

ABSTRACT NO 8

Title: Recent Advances In Sterilization & Disinfection In Dental Practice

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ABSTRACT

Sterilization and disinfection are critical components of infection control in dental practice. Dental procedures generate aerosols and involve frequent contact with blood and saliva, increasing risk of cross infection. Effective sterilization protocols are essential to prevent the transmission of infectious agents such as bacteria, viruses, fungi, and spores. Although conventional sterilization and disinfection methods are widely practiced, their limitations have encouraged the development of advanced technologies in modern dentistry.

Objective- To evaluate and compare conventional and recent advanced sterilization and disinfection used in dental practice

Conclusion- Recent advances in sterilization and disinfection provide improved infection control in dental practice. Their use can enhance patient safety, protect dental professionals, and improve overall clinical efficiency

Keywords:1 Sterilization and disinfection 2. modern dentistry, 3. infection control

ABSTRACT NO 9

Title: Cold Plasma

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ABSTRACT

Cold plasma, also referred to as non-thermal atmospheric plasma, has gained significant attention in dentistry owing to its ability to generate reactive oxygen and nitrogen species at room temperature without inducing thermal injury to oral tissues. This review aims to outline the fundamental principles, biological mechanisms, and clinical applications of cold plasma in contemporary dental practice. Evidence from existing literature suggests that cold plasma exhibits strong antimicrobial efficacy against a wide range of oral microorganisms, including resistant biofilms, through mechanisms involving cell membrane disruption and oxidative stress induction. In restorative dentistry, plasma treatment favorably alters tooth surface characteristics, enhancing wettability and improving the bonding efficacy of adhesive restorative materials. Its application in endodontics has shown improved root canal disinfection when used as an adjunct to conventional irrigation protocols, while periodontal and implant therapies benefit from effective surface decontamination and enhanced wound

healing. Additionally, cold plasma-assisted tooth whitening demonstrates improved bleaching outcomes with reduced postoperative sensitivity. Despite its advantages. factors such as technique sensitivity, limited penetration depth, and high equipment costs pose challenges to routine clinical adoption. Overall, cold plasma represents a promising minimally invasive technology with potential to improve treatment outcomes and patient comfort, warranting further standardization and long-term clinical validation.

Keywords: Cold plasma; Minimally invasive dentistry; Biofilm disruption; Dental applications

ABSTRACT NO 10

Title: Nanoparticles Based Strategies For Eliminating Enterococcus Faecalis In Post Endodontic Infection

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ABSTRACT

Introduction: Post-endodontic treatment failure is most commonlya ssociated with the persistance of Enterococcus faecalis, a highly resistant microorganism capable of surviving harsh intracanal conditions, penetrating deep dentinal tubules, and forming stable biofilms. Conventional root canal irrigants and intracanal medicaments often fail to completely eliminate this pathogen, leading to reinfection and periapical pathology. Recent advances in nanotechnology have introduced nanoparticles as promising adjuncts to improve post-root canal disinfection and long-term treatment success

Objective: Nanoparticles have emerged as a promising adjunct in endodontic disinfection owing to their ultra-small size, high surface area, and enhanced antimicrobial properties. Incorporation of nanoparticles into irrigants, sealers, and intracanal medicaments may significantly reduce bacterial persistence and improve endodontic treatment outcomes.

Methods: An in-vitro study was conducted using extracted single-rooted human teeth inoculated with Enterococcus faecalis to allow biofilm formation. Specimens were treated with different nanoparticles (silver, chitosan, zinc oxide, or bioactive glass) applied as irrigants, intracanal medicaments, or sealer additives. Antibacterial efficacy was evaluated by colony-forming unit (CFU) counts and microscopic analysis, and results were statistically compared with conventional disinfectants.

Results: Nanoparticle-treated groups showed a significant reduction in Enterococcus faecalis counts compared to conventional endodontic disinfectants. Enhanced penetration into dentinal tubules and effective disruption of bacterial biofilms were observed, with silver and chitosan nanoparticles demonstrating the highest antimicrobial efficacy. Overall, nanoparticle incorporation resulted in superior canal disinfection and reduced bacterial survival.

Conclusion: Nanoparticles demonstrate superior antimicrobial efficacy against Enterococcus faecalis compared to conventional endodontic disinfectants. Their ability to penetrate dentinal tubules and disrupt biofilms enhances root canal disinfection, suggesting that nanoparticle-based materials can improve the success of endodontic treatment and reduce post-treatment infections.

Keywords: Nanoparticles; Enterococcus faecalis; Endodontic infection; Root canal disinfection; Biofilm; Dentinal tubules; Antimicrobial efficacy

ABSTRACT NO 11

Title: ROBOTICS AND DIGITAL INTELLIGENCE IN ENDODONTICS:A PARADIGM SHIFT

Nihda Saycd,Dr. Shuchitha L

NSVK Sri Venkateshwara Dental Collcge and Hospital, *Bangalore, Karnataka*

ABSTRACT

Introduction:Successful endodontic therapy relies on precise access cavity preparation, accurate canal negotiation, and controlled instrumentation. Conventional techniques are highly operator dependent and may be compromised by complex anatomy, pulp canal obliteration, limited visibility, and procedural fatigue. Robotics and guided endodontics integrate cone beam computed tomography, computer-aided design and manufacturing, and navigation systems to enhance accuracy, reproducibility, and tooth structure preservation.

Objective:To evaluate the clinical relevance, advantages, limitations, and reported success of robotic and guided endodontic techniques.

Methods :A narrative review of contemporary research literature was performed focusing on static and dynamic guided endodontics and robotic assistance. The workflow includes CBCT-based virtual planning, three-dimensional canal mapping, fabrication of access guides or navigation pathways, and controlled access cavity preparation using dedicated burs. Outcomes were compared with conventional French and techniques.

Results :Recent studies demonstrate that guided endodontics enables highly accurate canal localization, particularly in calcified canals, with reported success rates above 90% and significantly reduced deviation from planned access paths. Literature from the Journal of Endodontics reports reduced incidence of perforation, excessive dentin removal, and procedural errors compared with conventional methods. Advantages include enhanced precision, standardized outcomes, improved ergonomics, reduced chairside time, and predictable management of complex cases. Limitations include high cost, dependence on CBCT imaging, limited intraoperative flexibility, technique sensitivity, and the requirement for specialized training and equipment.

Conclusion :Robotics and guided endodontics represent a shift toward precision-driven endodontic care. While current limitations restrict widespread clinical use, ongoing technological advancements suggest promising future integration.

Keywords: Precision dentistry, advanced technology, guidcd endodontics, artificial intelligence

ABSTRACT NO 12

Title:Periodontics and Orthodontics: A Synergistic Approach in General Dental Practice

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ABSTRACT

The interrelationship between periodontics and orthodontics is highly relevant in general dental practice, as both disciplines contribute to healthy, functional, and esthetic dentition. Periodontal health plays a crucial role in the success of orthodontic tooth movement; healthy gingiva, adequate alveolar bone support, and effective plaque control are essential before initiating treatment. Untreated gingivitis or periodontitis may increase the risk of inflammation, attachment loss, gingival recession, and alveolar bone loss during orthodontic therapy.

Orthodontic treatment can also influence periodontal health. Well-planned tooth movement may improve periodontal conditions by correcting malalignment and reducing plaque-retentive areas, whereas excessive forces, poor oral hygiene, and inadequate periodontal monitoring may accelerate periodontal breakdown. General dentists play a key role in early diagnosis, patient education, oral hygiene maintenance, and timely referral. An integrated approach emphasizing prevention,

periodontal stabilization, and regular follow-up ensures predictable outcomes and long-term oral health. This poster illustrates the interdependence between periodontics and orthodontics and highlights key clinical implications for general dental practice

ABSTRACTS FOR POSTER PRESENTATION HALL 2 SESSION 2– 1 TO 12

ABSTRACT NO 1

Title: Tiny Particles, Big Impact: Nanotechnology In Tooth Restoration

Aishwarya GS, Dr.Ambika Kumari R,

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ABSTRACT

Introduction: The evolution of restorative dentistry from conventional amalgam restorations to adhesive composite systems has been significantly influenced by the introduction of nanotechnology Nanomaterials, defined by their dimensions in the nanometer range, exhibit distinct chemical, physical, and biological properties that enhance the functional performance of dental restorative materials. This combined review evaluates the current applications of nanotechnology in restorative dentistry, focusing on improvements in mechanical strength, antibacterial activity, remineralization potential, esthetics, and longevity of restorations. A comprehensive review of recent literature was performed using databases such as PubMed and Google Scholar, targeting studies related to nanocomposites, nano-adhesives, dental cements, and whitening agents. Nanoparticles including silica, zirconia, titanium dioxide, silver, zinc oxide, amorphous calcium phosphate, and nanodiamond have been incorporated into restorative materials to optimize their properties. The findings indicate that nanofillers enhance flexural strength, microhardness, wear resistance, and bond strength, while reducing polymerization shrinkage. Additionally, nano-enhanced adhesives and multifunctional bioactive composites demonstrate protein-repellent behavior, self-healing capability, sustained ion release, and effective remineralization of demineralized tooth structure Silver, zinc oxide, and copper-based nanoparticles exhibit potent antibacterial activity, significantly reducing biofilm formation and the incidence of secondary caries. Furthermore, nanotechnology has improved dental cements and whitening systems by enhancing fluoride release, controlled bleaching action, and imaging quality.

Despite encouraging in-vitro and laboratory outcomes, challenges persist regarding large- scale manufacturing, cost, biocompatibility validation, and the need for long-term clinical trials. In conclusion, nanotechnology represents a paradigm shift in restorative dentistry, offering multifunctional, durable, and biologically active materials with the potential to transform future dental practice.

Keywords :Nano dentistry; Application of nanotechnology; Esthetic dentistry; Future scope of nanotechnology

ABSTRACT NO 2

Title: Abstract Format For Poster Presentation Evolution Of Matrix Systems In Conservative Dentistry

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ABSTRACT

Matrix systems play a crucial role in restorative dentistry by providing temporary support to restore proper tooth contour, proximal contact, and marginal integrity. The evolution of matrix systems reflects continuous advancements aimed at improving restorative outcomes, particularly with the transition from amalgam to composite resins. Early matrix systems, such as the Tofflemire universal matrix, were primarily designed for amalgam restorations and offered rigidity but limited adaptability. With the increasing use of tooth-colored restorations, newer systems were developed to address challenges like polymerization shrinkage, proximal contact formation, and anatomical contouring. Sectional matrix systems, combined with separation rings, emerged as a major breakthrough, enabling improved contact tightness and anatomical accuracy in posterior composite restorations. Customized matrices, transparent matrices, and silicone putty matrices further enhanced clinical versatility in complex cases. Overall, the evolution of matrix systems demonstrates a shift toward minimally invasive dentistry, superior esthetics, and predictable restorative success, aligning with modern principles of conservative and adhesive dentistry.

Keywords - Tofflemire universal matrix, Sectional matrix systems, Customized matrices

ABSTRACT NO 3

Title: Guided Endodontics: A Personalized Tool for Endodontic Excellence

Sangeetha M, Dr. Keerthan Bollamma

Coorg Institute Of Dental Science, Virajpet, Karnataka

ABSTRACT

Introduction: Guided endodontics represents a significant advancement in minimally invasive dental care by combining CBCT imaging, digital planning, and 3D-printed guides to achieve precise and predictable outcomes. These guides enable dental professionals to perform precise preparations and access challenging canals with enhanced accuracy and efficiency. The application of guided endodontics is particularly advantageous in managing calcified canals, pulp canal obliteration, and anatomically challenging cases, reducing procedural errors such as canal deviation and perforation. Conclusion and clinical implications: By enhancing accuracy, conserving tooth structure, and decreasing chairside time, guided endodontics improves both clinician confidence and patient safety. Despite limitations related to cost, equipment availability, and learning curve, its growing accessibility and technological refinement suggest a promising future role in routine endodontic practice. This poster outlines the essential components of this innovative technique, emphasizing its core mission: delivering excellence in endodontic treatment.

Keywords: Digital planning, 3D printed guides

ABSTRACT NO 4

Title:Beyond the Bur-Aesthetic and Preventive Laser Dentistry in Conservative Practice

Anushka Verma,Sejal S,Sanvika vishwa,Dr. Sandhya AK

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ABSTRACT

Laser technology has emerged as a valuable adjunct in Conservative Dentistry, offering minimally invasive alternatives to conventional rotary instruments. Dental lasers such as diode, Er:YAG, and Nd:YAG systems are widely used in both preventive and aesthetic procedures, improving precision and patient comfort. Lasers can be used in early caries detection, enamel etching, minimally invasive cavity preparation, polymerisation of composite restoration, bleaching of discoloured teeth, and veneer preparation. They are effective in dentinal desensitization through tubule sealing and provide significant bacterial reduction, contributing to improved caries control and periodontal health.

Esthetic applications include gingival recontouring, smile design, and depigmentation, offering precise soft tissue management with minimal bleeding and faster healing. Lasers also support minimally invasive restorative procedures, allowing maximum preservation of healthy tooth structure.

Current research supports the integration of laser dentistry into conservative practice, highlighting its role in enhancing preventive care, esthetic outcomes, and overall patient satisfaction

ABSTRACT NO 5

Title: Management of traumatic crown fractures

Shreya Kaushal,Dr Kiran Kumar

Government Dental College and Research Institute Bengaluru, Karnataka

ABSTRACT

Traumatic crown fractures of anterior teeth are common dental injuries that present aesthetic, functional, and psychological challenges. Contemporary adhesive dentistry emphasises minimally invasive treatment strategies focused on the preservation of natural tooth structure. When the fractured fragment is available and intact, fragment reattachment represents a biologically conservative and aesthetically favourable treatment option.

This case report describes the clinical management of an uncomplicated crown fracture using fragment reattachment with a resin-based composite. Following comprehensive clinical and radiographic evaluation, the fractured fragment is decontaminated and preserved. Surface preparation of both the fragment and the remaining tooth structure is performed, followed by acid etching and application of an adhesive bonding system. The fragment is accurately repositioned and reattached using a light-cured composite resin. Occlusal adjustment, finishing, and polishing are carried out to optimise marginal adaptation and aesthetic integration.

Postoperative evaluation demonstrates satisfactory functional and aesthetic outcomes, with excellent colour match, marginal integrity, and patient acceptance. Fragment reattachment offers advantages such as preservation of original tooth morphology, colour stability, reduced treatment time, and cost-effectiveness. Within the limitations of this case, adhesive fragment reattachment represents a reliable and conservative approach for the management of traumatic crown fractures when appropriate case selection and strict adherence to adhesive protocols are ensured.

Keywords: tooth fragment reattachment, traumatic crown fracture, aesthetic rehabilitation, resin based composite.

ABSTRACT NO 6

Title:A New Era of minimally invasive dentistry, powered by smart biomaterials

Chetana Shingadi,Nagaram Nikitalahari,Vamshika B S,Dr. Savita B Naik

Government Dental College and Research Institute Bengaluru, Karnataka

ABSTRACT

As Devan once quoted "Our goal should be perpetual preservation of what remains rather than meticulous restoration of what is missing"

In recent years there has been a paradigm shift in dental practice towards minimally invasive techniques that aim to conserve healthy tooth structure while effectively managing disease. however conventional materials remain passive and often limit their response to dynamic environments. This has led to evolution of smart biomaterials which enable the restoration to actively participate in caries prevention and tooth preservation.

Smart biomaterials are designed to detect and respond to environmental stimuli such as pH fluctuations, bacterial activity and moisture change, further initiating a therapeutic response accordingly. The materials are categorized into nanocomposites, hydrogels, bioactive agents, chemical and resin-based systems, intelligent carrier platforms, and ceramic-based materials. Clinical studies reinforce the role of smart biomaterials in minimally invasive care.

Unlike passive adjunctive therapies, smart biomaterials provide sustained, stimulus responsive protection, transforming restorations into biologically interactive systems. This poster highlights the design strategies, underlying mechanisms, and representative experimental or preclinical findings evaluating their progress in drug delivery, antibacterial-remineralization coupling, self-healing capacity and tissue engineering applications emphasizing their significant role in advancing an intelligence based era of minimally invasive dentistry.

Overall, this poster provides a comprehensive methodological and developmental perspective on smart restorative materials, "with the goal of supporting their translation from laboratory innovation to clinical application.

Keywords: Smart biomaterials, minimally invasive dentistry, intelligent carrier platform, biologically interactive systems.

ABSTRACT NO 7

Title:When Molecules Speak: Biomarkers in Endodontics

Anurag Bhowmik, Deepthi S,Dr Rupali Karale

KLE Society's Institute of Dental Sciences, Bengaluru, Karnataka

ABSTRACT

Precise diagnosis of pulpal and periapical diseases remains a cornerstone of successful endodontic therapy. However, conventional diagnostic methods such as sensibility testing and radiographic assessment are limited by subjectivity and their inability to reflect the true biological status of the pulp. Emerging evidence from molecular and immunological studies highlights the diagnostic potential of biomarkers—quantifiable biological molecules associated with inflammation, tissue degradation, microbial activity, and repair. Biomarkers including pro-inflammatory cytokines, chemokines, matrix metalloproteinases, angiogenic factors, and bacterial components have been identified in pulp tissue, dentinal fluid, gingival crevicular fluid, saliva, and periapical exudates, demonstrating significant correlation with pulpal pathology and clinical symptoms.

Conclusion: The incorporation of biomarker-based diagnostics offers a biologically relevant and objective approach to endodontic diagnosis, enabling improved differentiation of pulpal disease states and earlier detection of pathology. Although current use remains largely research-oriented, continued advancements in molecular diagnostics and point-of-care technologies may facilitate clinical translation, supporting evidence-based and personalized endodontic treatment strategies.

Keywords: Biomarkers; endodontic diagnosis; molecular diagnostics; precision endodontics

ABSTRACT NO 8

Title:Digital Dentistry: Merging Technology With Clinical Excellence

Vijay Krishna C,Maha Lakshmi L,Dr. Shweta R

KGF College of Dental Sciences and Hospital, Kolar Fields, Karnataka

Abstract

Digital Dentistry: Merging Technology With Clinical Excellence Digital Dentistry Has Transformed The Field Of Dentistry, Revolutionizing Diagnosis, Treatment Planning, And Restoration Fabrication.From The Advent Of Intraoral Scanners To The Integration Of Cad/Cam And 3d Printing, The Industry Has Witnessed Significant Advancements.This Poster Explores The Evolution Of Digital Dentistry, Highlighting Key Milestones, Current Trends, And Future Directions.Studies Have Shown That Digital Impressions (Intraoral Scanners) Offer Superior Accuracy And Patient Comfort Compared To Traditional Methods .

1). CAD/CAM Technology Has Enabled Same-Day Restorations, Improving Efficiency And Patient Satisfaction

2). 3d Printing Has Expanded Possibilities For Customized Prosthetics, Implants, And Surgical Guides.

(3)As Digital Dentistry Continues To Evolve, We Can Expect Integration With Ai, Augmented Reality, And Tele-Dentistry, Further Enhancing Patient Care Treatment.

Keywords: Digital Dentistry; CAD CAM ; 3D PRINTING

ABSTRACT NO 9

Title: REGENERATIVE ENDODONTICS : A Review And Update(From Repair To Regeneration - Biology Over Fillings)

Ananya Sunil,Rumana S, Dr. Swetha R

KGF College of Dental Sciences and Hospital, Kolar Fields, Karnataka

ABSTRACT

Regenerative endodontics represents a paradigm shift in the management of necrotic immature permanent teeth by focusing on biological healing rather than conventional mechanical repair. Traditional root canal therapy, although effective in mature teeth, fails to promote continued root development in teeth with open apices, resulting in thin dentinal walls and increased susceptibility to fracture. Regenerative endodontic procedures aim to restore the vitality of the pulp–dentin complex, thereby enabling continued root maturation and apical closure.

This approach is based on the principles of tissue engineering, involving the interaction of stem cells, scaffolds, and growth factors. Clinically, regenerative endodontics employs minimal instrumentation, effective canal disinfection, induction of intracanal bleeding or placement of biologically active scaffolds such as platelet-rich fibrin, followed by a coronal seal using biocompatible materials like mineral trioxide aggregate or biodentine. Recent advances, including the use of bioactive scaffolds, nanotechnology, and cell-free regenerative strategies, have enhanced the predictability and clinical outcomes of these procedures.

Despite certain limitations such as technique sensitivity and variability in tissue regeneration, regenerative endodontics holds significant promise for the future of endodontic therapy. With ongoing research and technological advancements, it has the potential to revolutionize clinical practice by transforming non-vital teeth into biologically functional units.

Keywords : Regenerative endodontics,Tissue engineering, Immature permanent teeth, Stem cells

ABSTRACT NO 10

Title: Mastering Moisture Control: Strategic Isolation Protocols for Conservative Procedures

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ABSTRACT

Enhancing Restorative Success Through Strategic Isolation. Evidence-Based Clinical Outcomes. To analyse the relationship between isolation methods and restorative outcomes, including bond strength, bacterial contamination reduction, and restoration survival. Comprehensive literature review of clinical trials (2015-2025) analyzing 45 peer-reviewed studies. Parameters included bond strength measurements, bacterial aerosol reduction, and restoration failure rates. Comparative analysis of rubber dam, cotton rolls, and contemporary systems (Isolite, DryShield, OptraDam) was performed.

Rubber dam isolation demonstrated 70-99% reduction in bacterial contamination. Bond strength showed significant improvement with absolute isolation ($p<0.05$). Novel systems reduced chair-side time by 15-25% while maintaining moisture control. Moisture contamination was identified as the primary cause of adhesive failure and secondary caries.

Conclusion: Strategic isolation is clinically necessary for predictable restorative outcomes. Evidence supports mandatory rubber dam use for adhesive procedures and endodontics. Proper isolation directly influences restoration longevity, patient safety, and infection control in conservative dentistry.

Keywords: Moisture control; Isolation techniques; Bond strength; Restorative dentistry

ABSTRACT NO 11

Title: Smart Irrigation Approaches in Root Canal Treatment

Ruhi Zehra Abbas Nassur, Dr. Madhu Kiran M K

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ABSTRACT

Successful endodontic therapy requires effective elimination of microorganisms from the complex root canal system. Conventional chemomechanical preparation and irrigation protocols often fail to completely eradicate resistant microorganisms within dentinal tubules, lateral canals, and biofilms. Persistent pathogens such as Enterococcus faecalis and Candida albicans are frequently associated with post-treatment disease and endodontic failure. Therefore, newer adjunctive disinfection strategies have been introduced to enhance microbial reduction.

Objective: To evaluate photodynamic therapy as an adjunct to conventional root canal disinfection and to highlight recent advances in irrigation activation systems, chelators, and nanotechnology used in endodontics.

Methods: Photodynamic therapy involves the placement of a photosensitizer such as methylene blue or toluidine blue O into the root canal system, followed by activation using light in the red wavelength range of 630–660 nm. This interaction generates reactive oxygen species that cause irreversible damage to microbial cell walls, proteins, and nucleic acids. PDT is effective against gram-positive and gram-negative bacteria, fungi, and biofilm-forming microorganisms without inducing antimicrobial resistance. Recent irrigation activation techniques such as passive ultrasonic irrigation, sonic activation, photon-induced photoacoustic streaming, EndoActivator, Vibringe, and photon-activated disinfection enhance irrigant penetration and canal cleanliness. Weak chelators like etidronic acid allow continuous chelation with sodium hypochlorite, improving smear layer removal while maintaining antimicrobial efficacy. Nanoparticles including silver and chitosan demonstrate superior antibacterial activity due to their small size and increased surface area.

Conclusion: Photodynamic therapy combined with advanced irrigation activation systems, weak chelators, and nanotechnology offers a promising adjunctive approach for effective root canal disinfection, leading to improved outcomes in endodontic practice

Keywords: root canal Disinfection, Photodynamic therapy, Endodontic biofilms, Adjunctive antimicrobial therapy

ABSTRACT NO 12

Title: Biomimetic Enamel Repair using keratin

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ABSTRACT

Dental enamel is the hardest part of the human body and is made mostly of mineral, with less than 1% organic material left in mature enamel. Even though this organic part is very small, it plays an important role in making enamel strong, flexible, and resistant to chemical damage. Recent studies have shown that hair keratin proteins, especially keratin 75 (KRT75), are present in mature enamel. These keratins are mainly found around enamel rods and help maintain their proper arrangement and strength.

Research has shown that changes (mutations) in the KRT75 gene can disturb enamel structure, reduce enamel hardness, and increase the risk of dental caries. This is the first clear evidence showing a direct genetic link between a protein in enamel and higher chances of tooth decay. These findings also highlight the importance of personalized preventive dental care for individuals with such genetic

Based on this biological understanding, new biomimetic approaches have been developed to repair enamel using keratin-based materials. Keratin films made in water can naturally arrange themselves into fibrous structures that guide the growth of enamel-like mineral crystals. This process closely copies natural enamel formation and has been shown to improve both the strength and appearance of early enamel damage.

Overall, keratins play a dual role: they are important for natural enamel strength and are also promising materials for future enamel repair. Understanding their role can help develop more natural. protein-based methods to repair enamel instead of simply replacing it with artificial materials.

Keywords: Enamel biomineralization, Keratin 75, Keratin-based scaffolds, Genetic susceptibility to caries

ABSTRACTS FOR PAPER PRESENTATION HALL 3 – 1 TO 13

ABSTRACT NUMBER - 1

Title: Experience the future of dentistry with Centi on: the perfect blend of biological harmony and Aesthetic brilliance

Afreen Zeba , Tahseen Banu ,Dr. Alan Winston D

College of Dental Sciences, Davangere*, Karnataka*

ABSTRACT

In this rapidly changing environment with restorative dentistry, a completely revolutionary material such as Cention is distinguished by its ability to combine ideally with biological compatibility, combined with impressive functional qualities. Designed specifically for the restoration of dental structures, Cention addresses the basic requirement of materials that are not only useful for maintaining but also for enhancing the natural functions of a tooth. The biocompatibility of Centi on ensures minimum irritation to ensure healthy responses of the surrounding tissues for the mere purpose of delivering absolutely remarkable aesthetic results. The completely revolutionary new material indicates that dentists are now in a position to perform permanent restorations without any hesitation, owing to its capacity to adapt to different clinical situations, which range from posterior to anterior restorations. In conclusion, Cention represents a commitment to excellence in restorative dentistry by integrating different aspects such as biocompatibility with function for delivering ultimate satisfaction and health

Keywords:Cention, Restoration, alkasite restorative material

ABSTRACT NO 2

Title: Mineralised Markers: A Systematic Investigation into the Relationship between Pulpal Calcifications and Systemic Disease: A Retrospective Observational Study

Samyuktha K,Sangeetha M,Dr. Keerthan Bollamma

Coorg Institute Of Dental Sciences,Virajpet, *Karnataka*

ABSTRACT

Introduction: Many conditions, such as pulp degeneration, inductive interactions between the epithelium and pulp tissue, age, caries, operative procedures, periodontal diseases, epithelial rests in the pulp tissue, orthodontic tooth movement, circulatory disturbances in the pulp tissue, idiopathic factors, and genetic predisposition have been claimed to predispose to pulp stone formation. Correlation with systemic conditions is being investigated. However, very few studies have assessed the prevalence of pulp stones in the Indian population.

Objectives: To assess the correlation of systemic conditions, gender, age, and the prevalence of pulp stones

Methodology: The OPG of 300 patients were assessed for the presence of pulp stones in molars. Patients between the ages 25 and 70 were included in the study. Only patients who have undergone a diagnostic OPG were considered for the study. Patient's medical history was recorded. The presence or absence of pulp stones were evaluated radiographically and documented. The collected data were subjected to statistical analysis.

Results: The percentage of people with pulp stones generally increases with age. Pulp stones are slightly more common in females (70.42%) than in males (67.72%). Individuals with diabetes, hypertension, and hypothyroidism have shown 100%, 94.12% and 66.67% prevalence of pulp stones, respectively.

Conclusion: Within the limitations of the study, it can be concluded that pulp calcifications can act as a potential risk indicator for certain medical conditions, thereby, providing clues for early detection. Future studies could benefit from a more representative sample, including a wider age range and a more balanced distribution of participants with and without medical histories

Keywords : Pulpal Calcification , Systemic conditions

ABSTRACT 3

Title:Preserve Before You Perform: The Importance Of Clinical Decision-Making In Conservative Dentistry

Afra Samreen, Dr. Ashok

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ABSTRACT

Introduction:

Conservative dentistry aims to preserve natural tooth structure while restoring function and esthetics. Inappropriate or aggressive restorative interventions may compromise pulpal vitality and weaken the structural integrity of the tooth. Therefore, sound clinical decision-making plays a critical role in determining the need, timing, and extent of restorative procedures.

Concept / Clinical Perspective:

Clinical decision-making in conservative dentistry involves careful assessment of caries depth and extent, evaluation of pulpal and periapical status, consideration of patient-related risk factors, and a balanced risk–benefit analysis of proposed treatment options. Emphasis is placed on selecting the least invasive intervention that preserves sound enamel and dentin while protecting pulpal health. Avoidance of overtreatment is essential to prevent unnecessary loss of tooth structure, pulpal irritation, and reduced longevity of restorations.

Clinical Significance:

Adopting a “preserve before you perform” approach enables clinicians to deliver biologically sound, predictable, and long-lasting restorative outcomes, thereby enhancing overall treatment success in conservative dental practice.

ABSTRACT4

Title:Nanotech: Realm of a New Age Dentistry

Chandan KY,Kaushik Gachinamani,Abhishek VS,Arya S V,Dr. Seema Merwade

Government Dental College and Research Institute, Bengaluru*, Karnataka*

ABSTRACT

The rapid pursuit of technological innovation, fueled by the rising demand for sophisticated medical diagnostics and treatments, has ushered in the age of nanotechnology. This field focuses on the precise manipulation of matter at the atomic and molecular levels. As interest in these applications expands, it is giving rise to the specialized discipline of "nanodentistry". Nanotechnology in conservative dentistry and endodontics include nanocomposites, nanofilled glass ionomer cement, nanocoating agents, nano reminerializing agent, nano-whitening toothpaste, ceramics using nanozirconia, nanoparticles as antimicrobial agents, endodontic disinfection using nanoparticles, nano-diamond gutta-percha, endodontic sealer, and many more which offer good properties as compared to that of conventional materials. Even though the application of nanotechnology on dentistry is limited at present, rapidly progressing investigations and research will ensure that nanotechnology is going to be the next major breakthrough. This poster depicts the applications of nanotech in fields of restorative dentistry and endodontics which helps in revolutionizing the various aspects of the conventional materials and techniques that are routinely involved in a dental practice.

ABSTRACT 5

Title: Building Blocks: Mastering Composite Layering Techniques

Avani B S,Quratul Ain J ,Dr. Prathima

Coorg Institute Of Dental Sciences, Virajpet*, Karnataka*

ABSTRACT

INTRODUCTION:

Esthetic and functional restoration of teeth using resin-based composites has become an integral part of modern Conservative Dentistry. Despite continuous advancements in composite materials, polymerization shrinkage and its associated stresses remain major challenges affecting marginal integrity, postoperative sensitivity, and longevity of restorations. Appropriate composite placement techniques play a crucial role in minimizing these undesirable effects and enhancing clinical success.

This paper reviews various composite placement techniques commonly employed in clinical practice, with emphasis on their principles, indications, advantages, and limitations. Conventional bulk placement, incremental layering techniques such as horizontal, oblique, and vertical layering, split-increment. Recent advancements like bulk-fill composites and their modified placement protocols are also highlighted.

Incremental placement techniques help reduce polymerization shrinkage stress by decreasing the configuration factor (C-factor), improving light penetration, and ensuring better adaptation to cavity walls. Proper layering not only improves marginal seal but also enhances esthetics by allowing controlled shade and translucency selection. The choice of technique should be guided by cavity design, depth, location, and esthetic requirements.

CONCLUSION:

Understanding and proper execution of composite placement techniques are essential for achieving durable, esthetic, and biologically acceptable restorations. Selection of an appropriate technique, combined with meticulous operative procedures, significantly improves the clinical performance and longevity of composite restorations.

KEYWORDS:

1. COMPOSITE PLACEMENT TECHNIQUE 2. POLYMERIZATION SHRINKAGE STRESS

3. MARGINAL INTEGRITY 4. C-FACTOR

ABSTRACT 6

Title:Next-Generation Caries Detection Powered by AI

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ABSTRACT

Dental caries is one of the most prevalent chronic oral diseases worldwide, affecting individualsof all age groups and posing a significant public health burden. It is characterized by the progressive demineralization of dental hard tissues resulting from complex interactions between cariogenic microorganisms, dietary factors, and host susceptibility. Conventional diagnostic methods, including: visual-tactile examination, bitewing radiographs, intraoral photographs, and advanced imaging techniques, remain the cornerstone of caries detection. However, these approaches are often limited by subjectivity, inter-examiner variability, and reduced sensitivity in identifying early or incipient lesions.

Artificial intelligence (AI), a rapidly advancing field of computer science focused on simulating human intelligence, has emerged as a promising tool in dental diagnostics. By employing machine learning and deep learning algorithms, AI systems can analyse radiographs, clinical images, and patient data with enhanced accuracy and consistency. These systems facilitate early lesion detection, caries risk assessment, and predictive analytics, enabling timely intervention and personalized treatment planning. Furthermore, AI-driven diagnostic models can assist clinicians in clinical decision-making while reducing diagnostic errors and improving efficiency.

Despite its promising applications, the integration of AI into dental practice presents challenges, including the need for high-quality datasets, algorithm transparency, ethical considerations, and clinical validation. Addressing these concerns is essential to ensure the reliability and acceptance of AI-based diagnostic tools. Overall, artificial intelligence has the potential to revolutionize dental caries diagnosis and management, supporting the transition toward precision dentistry and enhancing patient-centered oral healthcare outcomes.

Keywords: Dental caries, Artificial Intelligence, Diagnosis

ABSTRACT 7

Title:ROOTS, ROUTES AND RINSES": IRRIGATION SIMPLIFIED

Safiya Noorain,Dr. Anantha Krishna S.

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ABSTRACT

The success of endodontic treatment is fundamentally a battle against biology. While mechanical shaping provides the framework, it is the irrigation protocol that determines the clinical outcome by targeting the microscopic "islands" of infection that files simply cannot reach.

Root canal infections are not merely a collection of bacteria, but a polymicrobial biofilm anchored deep within dentinal tubules and lateral anatomy. Persistent species, such as Enterococcus faecalis, thrive in these niches, resisting traditional disinfection.

Modern endodontics has evolved from a mechanical craft into a biological science. Achieving a "biologically clean" canal requires a strategic sequence of chemistry and physics. By pairing the tissue-dissolving power with the chelating action and the energy of ultrasonic activation, clinicians can predictably eliminate the microbial load, paving the way for predictable healing and long-term tooth retention. Successful endodontic treatment relies heavily on effective irrigation, transitioning from simple chemical rinsing to advanced strategies involving high-concentration solutions and mechanical activation.

This systematic review evaluates modern irrigation techniques, including various irrigant types and activation methods, regarding antimicrobial efficacy, smear layer removal, and long-term clinical success. The study concludes that while contemporary techniques enhance disinfection, careful sequencing and pre-endodontic dentin sealing are vital to maintain bond strength and ensure patient safety.

Keywords: Endodontic irrigation, Antimicrobial efficiency, Irrigant Activation

ABSTRACT 8

Title:Beyond Sugar: The Genetic Architecture Of Dental Caries

Utkarsh Pranav,Mohammed Faisal Asil,Dr Swetha H B

RajaRajeswari Dental College & Hospital, *Bengaluru, Karnataka*

ABSTRACT

Introduction: Dental caries are often explained by a simple formula—sugar, bacteria, and poor oral hygiene. Yet clinical experience reveals a more intriguing reality: individuals with similar habits can have strikingly different caries outcomes. This variation suggests that factors beyond lifestyle, particularly genetics, play a critical role in determining caries susceptibility.

Review Genes shape enamel strength, tooth morphology, and resistance to acid attack, long before caries appear clinically. Genetic regulation of salivary flow, buffering capacity, antimicrobial activity, and immune responses further influences the oral environment and host–microbe interactions. Variations in taste perception genes may also affect dietary preferences, indirectly altering caries risk. Together, these inherited factors create unique risk profiles, explaining why dental caries behave so differently among individuals

Conclusion- Genetics is a silent yet powerful determinant of dental caries, guiding a shift from uniform prevention toward personalized, risk-based, and precision-oriented oral healthcare

Keywords: Dental caries, antimicrobial activity, genetics

ABSTRACT 9

Title:Beyond Calcium Hydroxide-Natural Biomaterials for Pulp

Chand Thapa,Shaistha Naaz, Dr Khaja Iftheqar Ahmed

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ABSTRACT

Calcium hydroxide has been widely used for direct pulp capping due to its antimicrobial activity and dentinogenic potential; however, its high alkalinity produces superficial coagulation necrosis, tunnel defects that allows bacterial penetration, and inconsistent long term outcomes. With the growing emphasis on biologically based vital pulp therapies, natural biocompatible materials are being investigated as safer and more regenerative alternatives.

Recent studies have explored substances like Propolis, Neem, Triphala, and Aloe vera. These materials demonstrate promising antimicrobial, anti-inflammatory, and pro regenerative properties without the cytotoxic effects associated with calcium hydroxide.

In addition, emerging edible polysaccharide scaffolds like rice starch and wheat starch hydrogels are explored as biodegradable carriers for these herbal extracts.

Their natural viscosity, excellent biocompatibility, and ability to retain moisture help create an ideal environment for odontoblastic differentiation. Conceptual biodesign insights suggest that combining herbal extracts with starch-based scaffolds can work synergistically to enhance dentin bridge formation, control inflammation, and support stable, long-term pulp healing

This review highlights a low-cost, biologically harmonious alternative to traditional pulp capping agents and provides a futuristic direction for nature-inspired vital pulp therapy.

Keywords: Calcium hydroxide alternatives; propolis and herbal extracts; starch-based scaffolds; vital pulp therapy

ABSTRACT 10

Title:From Clinic to Cosmos: Managing Dental Emergencies in Space

Khushi Singh,Manvi Sharma,Dr. Akshay V Anand

Vokkaligara Sangha Dental College and Hospital, *Bengaluru, Karnataka*

ABSTRACT

Long-duration space missions expose astronauts to environmental conditions such as microgravity, radiation, confinement, and limited access to medical care. Among oral health concerns, endodontic emergencies pose a significant challenge due to the absence of trained dental professionals during spaceflight. Space dentistry, an emerging interdisciplinary field, focuses on the prevention, diagnosis, and management of dental conditions under extraterrestrial conditions.

Microgravity has been shown to influence fluid behaviour, microbial virulence, immune response, and material properties, which can impact pulpal and periapical health. Given the constraints of space missions, emphasis is placed on preventive endodontics and pre-flight dental clearance. For prevention of in flight dental emergencies, a prelaunch protocol is followed which includes complete oral exam 6 months prior, completion of dental treatment 3 months prior & crew quarantine 14 days prior the flight.

Dental contingencies such as trauma, undiagnosed caries, infections, pulpits and bruxism during space missions may lead to dental emergencies, additionally dental barotrauma can occur due to reduced pressure changes, possibly leading to odontocrexis or odontoclasis, therefore astronauts are trained for anaesthesia delivery, temporary restorations, temporary crown placement and emergency tooth extractions. Simplified endodontic protocols, compact instrumentation, biocompatible materials with extended shelf life & teledentistry-based guidance are being explored to address in-flight dental emergencies.

This review highlights the relevance of space dentistry, the challenges imposed by the space environment & the need for further research using space-simulation models.

Keywords: Space dentistry; Microgravity; Extreme environment dentistry; Barodontalgia

ABSTRACT NO 11

Title:Sculpting Smiles with Precision: The Anterior Template Technique

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ABSTRACT

Traumatic injuries to anterior teeth and malocclusions such as midline diastema can significantly impact a person's smile, speech, phonetics, and oral hygiene, thereby affecting overall Apersonality and self-esteem. While conventional freehand composite restorations are widely used, they are highly technique-sensitive and often lead to inconsistencies in tooth form, palatal morphology, and incisal edge length, reducing aesthetic predictability.

The anterior template (putty index) technique offers a more structured and reliable approach to direct composite restorations. By guiding composite placement, it enhances control over tooth morphology and spatial orientation, resulting in improved consistency and predictability. This technique reduces chairside time, minimizes finishing and polishing, lowers the risk of errors, and supports minimally invasive dentistry by preserving sound tooth structure.

Overall, the anterior template technique aligns with the principles of preserve,protect, and perform ensuring biological integrity, functional harmony, and predictable aesthetic outcomes.

Keywords: Anterior template technique; Composite restoration; Esthetics

ABSTRACT 12

Title: ENDOCATOR - From Assumption to Accuracy in Endodontic Irrigation

Malavika T Manjunath, Dr. Keerthan Bollamma

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ABSTRACT

Introduction Effective root canal therapy depends on thorough irrigation, yet the endpoint of irrigation is often determined subjectively, based on operator experience rather than objective criteria. The Endocator device has emerged as a potential objective indicator to determine completion of canal disinfection by assessing canal cleanliness and fluid characteristics.The device analyzes the luminescence generated by an enzyme cycling method that process the adenosine triphosphate (ATP), adenosine diphosphate (ADP) and adenosinemonophosphate (AMP) present in organic residues.

Conclusion

Current evidence suggests that Endocator-based assessment may enhance accuracy in identifying irrigation endpoints compared with conventional subjective judgment. However, heterogeneity in study designs and limited clinical trials restrict definitive conclusions. This review aims to critically analyze available literature on ENDOCATOR and similar indicators, evaluating their scientific basis, clinical relevance, diagnostic accuracy and limitations in improving decision-making during endodontic irrigation.

Keywords: Endocator, Irrigation endpoint , Root canal disinfection, Clinical decision-making.

ABSTRACT NUMBER - 13

Title:Echoes of Healing: The Role of Ultrasonics in Regenerative Endodontic Success

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Vydehi Institute of Dental Sciences and Research Centre, Bengaluru, Karnataka

ABSTRACT

Regenerative endodontic procedures aim to re-establish pulp vitality in immature permanent teeth by encouraging biological repair rather than relying solely on conventional disinfection strategies. Despite promising outcomes, the success of these procedures is often compromised by incomplete removal of intracanal medicaments such as triple antibiotic paste and calcium hydroxide prior to induction of bleeding. Residual medicaments have been shown to exert cytotoxic effects on stem cells from the apical papilla (SCAP), adversely affecting their viability, attachment, and differentiation, thereby limiting regenerative potential.

Ultrasonic activation has emerged as an effective adjunct to conventional irrigation techniques in regenerative endodontics. By producing acoustic streaming and cavitation, ultrasonic energy enhances irrigant penetration into complex canal anatomies, including lateral canals and dentinal tubules. This results in superior elimination of medicament residues and bacterial biofilms when compared to syringe irrigation alone, facilitating restoration of a biocompatible dentinal surface essential for stem cell adhesion and proliferation.

Recent evidence suggests that the benefits of ultrasonic activation extend beyond improved canal cleanliness. Ultrasonic irrigation has been shown to preserve dentin-embedded growth factors and promote the release of bioactive signaling molecules that regulate stem cell migration, differentiation, and angiogenesis. These biological effects contribute to establishment of a favourable microenvironment for regenerative events such as revascularization, dentin deposition, and continued root maturation.

This review highlights the evolving role of ultrasonic activation as a key determinant in enhancing the biological and clinical outcomes of regenerative endodontic procedures. Incorporation of ultrasonic irrigation into routine regenerative protocols may improve treatment predictability, support stem cell viability, and contribute to the long-term success of biologically based endodontic therapies.

Keywords: stem cells from the apical papilla (SCAP), Ultrasonic activation, regenerative endodontics, intracanal medicament removal

ABSTRACTS FOR PAPER PRESENTATION HALL 4 – 1 TO 12

ABSTRACT 1

Title: Biological Pre-Conditioning Of Residual Dentin: An Integrative Review Of Bioactive And Herbal Adjuncts In Post-Caries Management"

Dhananjay Singh Gahlot, Dr.Swetha H B

Raja Rajeswari Dental College & Hospital,Bengaluru, Karnataka

ABSTRACT

Introduction: Residual dentin preserved after minimally invasive caries removal represents a biologically active yet structurally vulnerable substrate. Increased permeability, compromised mineral content, and residual microbial activity place this dentin at continued risk, even after restoration. While liners and bases offer mechanical sealing, they do not directly address the biological instability of the underlying dentin. This review highlights the critical need for biologically driven pre-conditioning strategies prior to definitive restorative procedures.

Review: Available literature on bioactive materials demonstrates their capacity to promote ion exchange, stimulate dentin remineralization, and stabilize the dentin–pulp complex. In parallel, herbal agents exhibit well-documented antimicrobial, anti-inflammatory, and collagen-protective effects on dentinal tissues. Although these approaches have largely evolved independently, their complementary mechanisms suggest a rational, integrative pre-conditioning concept aimed at optimizing residual dentin prior to liner placement and restoration to establish standardized protocols and long-term outcomes.

Conclusion- Biological pre-conditioning of residual dentin using bioactive and herbal adjuncts represents a paradigm shift from passive protection to active dentin stabilization in post-caries management. This integrative approach aligns with contemporary conservative dentistry principles and warrants further clinical validation to establish standardized protocols and long-term outcomes.

Keywords:1. Residual dentin, 2. Biological pre-conditioning, 3. Bioactive materials, 4. Herbal adjuncts

ABSTRACT 2

Title: Innovative Strategies for Conquering Dentin Hypersensitivity

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Dayananda Sagar College of Dental Sciences, Bengaluru,Karnataka

ABSTRACT

Dentin hypersensitivity is a common clinical condition characterized by short, sharp pain arising from exposed dentin in response to thermal, tactile, osmotic, or chemical stimuli. Despite its high prevalence, effective and long-term management remains challenging due to its multifactorial aetiology and subjective nature of pain perception. The condition is primarily explained by the hydrodynamic theory, where external stimuli cause fluid movement within dentinal tubules, leading to pulpal A8 fibres' activation. Management of dentin hypersensitivity requires accurate diagnosis, elimination of predisposing factors and selection of appropriate treatment modalities. This review paper will compare the different treatment modalities available for dentin hypersensitivity, highlighting their mechanisms of action, clinical effectiveness, advantages and limitations, thereby aiding clinicians in selecting evidence-based and patient-specific management strategies. Various treatment strategies have been proposed, ranging from non-invasive at-home therapies to professional in-office interventions. These include desensitizing toothpastes containing potassium salts, arginine or calcium compounds, topical agents such as fluorides, oxalates, and dentin bonding agents as well as advanced modalities like lasers and bioactive materials. Preventive approaches, including patient education, dietary modification, and proper oral hygiene practices, play a crucial role in long- term management. A comprehensive treatment can be considered universally superior for managing dentin hypersensitivity. Therapies that effectively occlude dentinal tubules and reduce neural transmission demonstrate more consistent and long-lasting clinical outcomes. A combined approach using at-home desensitizing agents along with professionally applied in- office treatments, delivered through a stepwise and, when necessary, multi-session protocol is recommended for effective long-term management of dentin hypersensitivity.

Keywords: Hypersensitivity, Desensitization, Preventive Strategies

ABSTRACT 3

Title: One Shade, Multiple Smiles: Clinical Versatility of Unishade Composites

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ABSTRACT

Unishade composite resins represent a significant advancement in conservative dentistry by addressing the challenges of shade selection while maintaining high esthetic outcomes. Unlike conventional multi-shade composite systems, unishade composites rely on a color-matching or chameleon effect, enabling a single shade to adapt to a wide range of natural tooth colors. This property reduces clinical complexity, inventory requirements, and chairside time without compromising restorative quality.

The scientific basis of unishade composites lies in advanced filler technology, optimized translucency, and controlled light interaction. Nano and supra-nano filler particles enhance light scattering and transmission, allowing the restoration to derive its perceived color from surrounding enamel and dentin. Rather than depending primarily on pigments, these materials utilize structural color, where light diffusion and reflection create effective shade blending. An appropriate balance between translucency and opacity is essential to achieve both cavity masking and natural integration.

Unishade composites closely mimic the optical behavior of natural enamel and dentin, enhancing biomimetic restorative outcomes. They minimize subjective errors related to lighting conditions, dehydration of teeth, and clinician experience during shade selection. Unishade systems provide more consistent esthetic results across different patients and clinical settings. Unishade composites are particularly useful in minimally invasive anterior and posterior restorations, small to moderate cavities, and routine clinical practice.

Overall, unishade composite resins provide a sound, efficient, and predictable restorative option, supporting the principles of minimal intervention dentistry

Keywords: chameleon effect; optical blending; filler technology; longterm stability

ABSTRACT 4

Title: Photodynamic Therapy In Root Canal Irrigation

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ABSTRACT

PDT is a non-invasive, antimicrobial approach that uses light to activate a photosensitizer,generating reactive oxygen species (ROS) that kill bacteria and disrupt biofilms.

1. Photosensitizer: A light-activated molecule (e.g., methylene blue, toluidine blue)

2. Light source: Low-intensity laser or LED light

3. Oxygen: Essential for ROS production

Mechanism:

1. Photosensitizer is applied to the root canal

2. Light is applied, activating the photosensitizer

3. ROS are produced, killing bacteria and disrupting biofilm

Benefits in Root Canal Irrigation:

1. Enhanced disinfection: Targets bacteria and biofilm

2. Reduced bacterial load: Complements traditional irrigants (NaOCl, EDTA)

3. Minimally invasive: No thermal or chemical damage

Clinical Applications:

1. Adjunct to conventional irrigation: Enhances treatment outcomes

Resistant cases: Effective against antibiotic-resistant bacteria.

Keywords: Mechanism, Benefit, Clinical Implications

ABSTRACT 5

Title: The cervical conundrum : Navigating the hurdles of NCCL management

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ABSTRACT

Background: NCCLs are characterized by the loss of tooth structure at the CEJ in the absence of dental caries, attributed to toothbrush abrasion, Abfraction and Erosion. This paper explores the complex nature NCCLs, focusing on the shift from traditional mechanical theories to a modern, multifactorial understanding of their development and treatment.

Conclusion: The clinical management of NCCLs must prioritize etiological diagnosis over surgical intervention. Successful outcomes are achieved through a combination of minimally invasive restorative techniques and aggressive patient education regarding dietary habits and occlusal protection.

ABSTRACT 6

Title: TRITONA Novel innovation for Optimistic Disinfection

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Government Dental College and Research Institute, Bangalore, Karnataka

ABSTRACT

Root canal therapy aims to eradicate the microbes from the root canal and further prevent reinfection. Root canal irrigation is crucial for eliminating the smear layer, necrotic tissue, bacteria, and their metabolites. Sodium hypochlorite (NaOCI) is the most frequently used irrigation solution however, its action is limited to the removal of the organic component of the smear layer when used alone.Thus, chelating agents, such as ethylenediaminetetraacetic acid (EDTA), are used in combination with NaOCl for the removal of the inorganic component, the alternating use of NaOCl and EDTA should be avoided as this reduces the antibacterial effect of NaOCI and may result in dentine erosion The concept of continuous chelation has been introduced to combine the advantages of NaOCI with those of chelating solutions to remove inorganic debris while disinfecting and dissolving organic tissues Triton (Brasseler, USA),is a newer all-in-one endodontic irrigant created by mixing two components, part A and part B, just before using. Part A includes proprietary mild chelator like Butanetricarboxylic acid, citric acid, surfactants, stabilizers, whereas Part B contains 8% NaOCl and pH modifiers. Triton is the first irrigant to deliver all of the benefits of NaOC1,EDTA, and Chlorhexidine in a single-step all-in-one irrigation solution.

This Review paper aims in doing an extensive search on literature material on platforms including PubMed, Google Scholar and Journals to assess is Effectiveness, pH, Cytotoxicity , Physicochemical and Biological properties, its effect on smear layer, microbial flora and also compare the parameters with conventional irrigation systems

Keywords: Continuous chelation, Endodontic irrigant, Triton

ABSTRACT 7

Title: Dentin Biomodification

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ABSTRACT

Dentin biomodification has emerged as a promising biomimetic strategy for improving the inherent limitations in resin-dentin bonding and enhancing the longevity of adhesive restorations. The resin-dentin interface is highly susceptible to enzymatic and hydrolytic degradation because of the activation of matrix metalloproteinases, the exposure of collagen fibrils, and the persistent moisture within the hybrid layer, which altogether contribute to the reduced bond strength and restoration failure. Dentin biomodification refers to the chemical or biological treatment of dentin substrates that enhances the stability of collagen, inhibits proteolytic enzymes, -and induces biomimetic remineralization. A wide variety of synthetic agents is used for this process ,These agents work by collagen cross-linking, matrix metalloproteinase inhibition, reduction of dentin permeability, and controlled mineral deposition within the demineralized collagen fibrils. In conc1usion, dentin biomodification represents the paradigm shift toward preventive and regenerative restorative dentistry.

Keywords: Collagen cross-linking, matrix metalloproteinases, bond durability, biomimetic reminera1ization

ABSTRACT 8

Title: Shaping Smiles through injection moulding technique

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ABSTRACT

Smile is where aesthetics meets confidence. Injection moulding technique is used in the aesthetic restoration of anterior teeth using a wax-up to align aesthetics and function with composite resin material. This technique allows us to precisely transfer traditionally/digitally planned restoration directly into the oral cavity. It is also known as Index technique, it's a straightforward technique where, injecting a flowable restorative material into a customized mould makes us achieve predictable aesthetics while preserving maximum natural tooth structure. This makes it a minimally invasive method which is repairable, cost effective and offers personalized treatment options. The beauty of this technique is its predictability and possibility to achieve great symmetry and marvellous primary, secondary, and tertiary morphology.Modern dentistry has undergone a significant transformation with the advent of digital technologies like the CAD/CAM and 3D printing technologies. These technologies enable the creation of a 3D model of the patient's dental structure through digital wax-ups and intraoral scanners. Injection moulding technique allows clinicians to transform a traditionally or digitally planned wax-up into direct composite restorations using a silicone mould. It enables the creation of dental restorations which flawlessly integrates both aesthetics and function.The flowable composite fills the mould seamlessly, creating a smooth transition to the tooth structure.

This paper will take you through the concept, clinical workflow & clinical application of this technique, highlighting its use in veneers, diastema closure, anterior aesthetic restorations, & full mouth restorations. Along with discussing its advantages, current limitations seen in daily practice and further advances.

Keywords: Injection moulding technique; Flowable resin composite; Modern dentistry;

Highly accurate aesthetics & function;

ABSTRACT 9

Title: Erosive Potential Of Sparkling Water On Enamel Surface Of Extracted Tooth Specimen: - An In Vitro Study

Ananya Rajesh, Dr. K. Karpagaselvi

Vydehi Institute of Dental Sciences And Research Centre, Bangalore, Karnataka

ABSTRACT

Introduction: Dental erosion is a multifactorial condition increasingly associated with the frequent intake of acidic beverages such as carbonated soft drinks and fruit juices. These beverages lower salivary pH and promote enamel dissolution. Sparkling water, often considered a healthier choice, contains carbonic acid and is mildly acidic (pH ~4.5), raising concerns about its erosive potential compared to other beverages.

Objectives: To evaluate and compare the erosive potential of two commercially available sparkling water brands on enamel surfaces in vitro.

Materials and Method: A total of 135 enamel specimens were prepared from 40 extracted teeth. Each specimen was weighed and then immersed in one of five test solutions: Sparkling Water Sample 1 (Zoik), Sparkling Water Sample 2 (Perrier), Carbonated Drink (Coca-Cola), Packaged Fruit Juice (Tropicana Orange Juice), and Control (Bisleri Water). Immersion periods were 6 and 24 hours, after which enamel weight loss was recorded. Initial pH and titratable acidity of each solution were measured before and after immersion. Data were analyzed using SPSS v25. As data were not normally distributed (per Shapiro-Wilk and Kolmogorov-Smirnov tests), non-parametric tests (Kruskal-Wallis, Friedman's) were applied. Pearson's correlation assessed the relationship between pH and enamel weight loss.

Results: The carbonated drink (pH 2.76) and fruit juice (pH 3.45) were highly acidic, with the highest titratable acidity and greatest enamel weight loss. Sparkling water samples showed mild acidity (pH 5.73 and 6.23) and minimal enamel erosion, comparable to the control (pH6.39). Enamel weight loss was greatest in fruit juice (0.0021 g), followed by the carbonated drink (0.0014 g);, sparkling waters (0.007, 0.006) and the control showed none. A strong negative correlation (r=0.999, p = 0.001) was observed between initial pH and enamel erosion over time.

Conclusion: Sparkling water exhibited the lowest erosive potential among acidic beverages tested. Though it may be a safer alternative to soft drinks and fruit juices, routine consumption is not recommended due to its mild erosive effect.

Keywords::Sparkling water, Titrable acidity, Oral Health, Dental erosion

ABSTRACT 10

Title: Dental Amalgam v/s Composite Restorations

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Dayananda Sagar College of Dental Sciences, Bangalore, Karnataka

ABSTRACT

Aim: To Assess and Compare the Perception,Clinical Preference,and Attitude Toward Dental Amalgam and Composite Restorations Among Dental Faculty, Students and Practitioners-A Questionnaire-Based Study

Background: Dental amalgam has been used for decades as a posterior restorative material owing to its durability and case of manipulation.However, increasing concerns regarding mercury content, environmental impact, esthetics and the advent of adhesive restorative materials have led to a gradual shift toward composite restorations. Despite this transition, amalgam continues to be taught and practiced in institutions as a part of curriculum,making its relevance in contemporary dentistry a subject of debate.

Materials and Methods:A cross-sectional questionnaire-based study was conducted among dental professionals and students using a self-designed, structured questionnaire. The questionnaire assessed knowledge,clinical preference, perceived advantages and limitations, and future outlook regarding amalgam and composite restorations. Responses were collected anonymously through an electronic platform. The collected data was subjected to descriptive analysis.

Results: The study is expected to reveal differences in perception and preference toward restorative materials across various levels of clinical experience, highlighting trends in contemporary restorative practice.

Conclusion: Assessing the perspectives of dental professionals and students provides insight into the current acceptance of amalgam and composite restorations and may help guide future teaching strategies and clinical decision-making in restorative dentistry.

Keywords: Amalgam, adhesion, composite resin, retention

ABSTRACT 11

Title: "Efficacy of Basella alba (Malabar spinach) leaves against *Streptococcus mutans*"

Vidya Iyer, Dr. K. Karpagaselvi

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ABSTRACT

Introduction: *Basella alba* (Malabar spinach) is an edible vine traditionally used in folk medicine. Its leaves are believed to possess antimicrobial properties due to certain bioactive compounds.

Objectives: To Assess the antibacterial potential of *Basella alba* leaf extract. Determine zone of inhibition (ZOI), minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) against S. *mutans*.Measure ZOI at varying extract concentrations.

Methodology: The agar well diffusion method was used to evaluate ZOI. Petri dishes with blood agar were inoculated with *S.mutans* and 8 mm wells were filled with 100 µL of various extract concentrations. Plates were incubated at 37°C for 48 hours. Levofloxacin was used as positive control. MIC was tested using 96-well micrtotiter plates containing plant extracts and standardized S.mutans culture incubated at 37°C for 24 hours. MBC was assessed by plating aliquots from MIC wells onto BHI agar.

Statistical Analysis: Data were processed using SPSS v25. Descriptive statistics included mean, standard deviation and median.

Results: ZOI increased significantly with increase in extract concentrations. Though less effective than levofloxacin, the extract displayed dose-dependent inhibition. MIC results showed increased bacterial reduction with rising concentrations. MBC confirmed complete bacterial elimination at more than 50%, comparable to levofloxacin.

Conclusion: *Basella alba* demonstrates significant antimicrobial activity against *Streptococcus mutans* indicating its potential as a natural ingredient in mouthwashes or toothpastes for regular use in prevention of dental caries, its efficacy suggests that it could serve as a safer alternative to conventional chemical products, which are often associated with adverse effects.

Key words: Basella alba, antimicrobial property, dental caries, safer alternative.

ABSTRACT 12

Title: Measuring the Unmeasurable: An Overview of Pain Scales in Dentistry

Pavitra Srivastava,Anurag Sharma,Dr. Nirupama

Vydehi Institute Of Dental Sciences & Research Centre, Bangalore, Karnataka

ABSTRACT

Pain is a complex and highly subjective experience influenced by biological, psychological, and sociocultural factors. In dentistry, accurate pain assessment is crucial for diagnosis, treatment planning, patient communication, and evaluation of treatment outcomes. However, the subjective nature of pain makes its quantification challenging, necessitating the development of standardized pain assessment scales to translate individual experiences into clinically meaningful data.

Objectives: This review aims to emphasize the importance of pain assessment in dentistry, describe commonly used pain scales, evaluate their applicability across diverse patient populations, and highlight recent advances in pain assessment research.

Methodology: A narrative review of the literature was conducted using electronic databases including PubMed and Google Scholar. Articles published in English focusing on pain assessment tools used in dental practice were reviewed. Conventional unidimensional scales, multidimensional questionnaires, and emerging objective assessment methods were included.

Results: Widely used pain assessment tools in dentistry include the Visual Analogue Scale, Numeric Rating Scale, Verbal Rating Scale, and Wong–Baker Faces Pain Scale. Behavioural pain scales are particularly useful in paediatric, geriatric, and cognitively impaired patients. Multidimensional tools such as the McGill Pain Questionnaire provide additional insight into pain quality and intensity. Recent research highlights advancements such as digital pain assessment tools, quantitative sensory testing, neuroimaging techniques, physiological biomarkers, and artificial intelligence-based pain analysis, aiming to improve objectivity and reliability.

Conclusion: Although pain remains inherently subjective, appropriate selection and application of pain assessment scales enhance clinical decision-making and patient-centred dental care. Emerging technologies show promise in bridging the gap between subjective pain perception and objective measurement, offering new directions for improved pain management in dentistry

Keywords: Pain assessment, Pain scales, Dentistry, Subjective pain, Visual Analogue Scale, Multidimensional pain measurement

ABSTRACTS FOR PAPER PRESENTATION HALL 5 – 1 TO 12

ABSTRACT NUMBER - 1

Title: The Bio-Imitation Innovation: Redefining Dental Materials Through Biomimetic Intelligence

Mahrusa Rumman , Shreya SH, Dr Swetha Mahesh

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ABSTRACT

Recent advances in dental materials have introduced smart and biomimetic materials that behave more like natural teeth. These materials are safe, compatible with our tissues, and have properties that make dental treatments more effective. Among them, shape-memory materials are fascinating, they can change their shape in response to stress, temperature, or pH and return to their original form. This unique ability helps fillings, sealers, and orthodontic wires adapt perfectly inside the mouth, improving treatment success and comfort. Many smart materials also fight bacteria and last longer than conventional options. These materials might lead to innovative and ground breaking dental treatments with much better clinical results.

Conclusion : Smart and shape-memory dental materials are changing the way we treat teeth. They make procedures more adaptable, effective, and patient-friendly, supporting natural healing and ensuring long-lasting results. With the aid of this review, we can learn more about these Biomimetic Materials.

ABSTRACT NUMBER - 2

Title: Endodontics in the GPS Era: 3D-Navigation for Calcified Canals

Arya Dhanu Rao ,Dr Prathima B J

KLE's Society's Institute Of Dental Sciences, Bangalore, Karnataka

ABSTRACT

Calcified root canals present one of the most difficult challenges in endodontic practice due to obliteration of the pulp space and loss of normal anatomical landmarks. Conventional access cavity preparation in such cases is often associated with excessive dentin removal, increased risk of perforation, prolonged chair time, and a higher chance of treatment failure. Three-dimensional (3D) navigation has emerged as a novel and highly precise technique for the management of calcified canals.

3D-guided endodontics utilizes cone-beam computed tomography (CBCT) data combined with digital planning software to determine an accurate and minimally invasive pathway to the root canal. This guidance can be delivered either through static navigation using 3D-printed templates or through dynamic navigation systems that provide real-time tracking of the bur during access preparation. These technologies allow clinicians to locate canals with sub-millimeter accuracy while preserving maximum tooth structure.

The application of 3D navigation significantly improves the predictability and safety of endodontic procedures in calcified teeth by reducing iatrogenic errors such as perforations and missed canals. It also shortens clinical time and enhances operator confidence. Although the technique requires specialized equipment and training, its advantages make it a valuable tool in complex endodontic cases. With continued advances in digital dentistry, 3D-guided navigation is set to redefine the standard of care for managing calcified root canals.

Keywords: 3D navigation; Calcified canals; Guided endodontics; CBCT

ABSTRACT NUMBER - 3

Title:Caries Remineralisation Therapy - An In Vitro Evaluation of Efficacy of Three Remineralising Agents by SEM and EDS Analysis.

Pranjul Sharma, Dr. Geeta I B

Raja Rajeswari Dental College And Hospital, Bangalore, Karnataka

ABSTRACT

Purpose: Study The Remineralising Potential Of Ayurvedic And Homeopathic Preparations In Comparison With Calcium Hydroxide.

Background: Dental Caries Is A Bacterial Disease That Occurs Due To Alterations In The Demineralisation-Remineralisation Cycle, Destroying Tooth Structure. Calcium Hydroxide, Being A Gold Standard As A Remineralizing Agent With Its Own Drawbacks, Has Led To The New Quest For Newer Remineralizing Agents. Therefore, Two Different Preparations Are Used In This Study.

Objectives:To Evaluate And Compare The Remineralising Potential Using Sem And Eds Analysis-

Methods: Methods, Materials, Analytical Proceduremeterials –

- Calcium hydroxide
- Calcarea flourica
- Cissus quadrangularis
- Distilled water
- HCL
- SEM

Analytical procedure:Collection of specimens – 15 extracted teeth, stored in distilled water, which were vertically sectioned and divided into 3 groups and subjected to remineralization treatments after the baseline demineralisation values assessment, using different reagents over a period of 3 weeks.SEM imaging and EDS analysis were conducted at 3rd, 6^{th,} and 12th weeks to monitor changes in surface characteristics and mineral content over time.

Results: Before demineralisation,

Cissus quadrangularis	Calcarea flourica
19.5+_ 0.63	19.19+_0.86

Following demineralization,

Cissus quadrangularis	Calcarea flourica
16.66+_0.92	16.49+_0.38

Conclusion

All 3 groups contributed to progressive increases in calcium and phosphorus percentages; the magnitude and consistency of improvement varied among them.Cissus quadrangularis emerged as the most effective in restoring both Ca and P percentages.

ABSTRACT NUMBER – 4

Title:Nanoparticles in Endodontics

Anavadya Sp, Chandana B ,Dr Shiraz Pasha

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ABSTRACT

Traditional endodontic therapy often fails due to the inability of conventional mechanlval instruments and chemical irrigants to eradicate persistent microbial biofilms within the complex, Imeroscopic anatomy of the root canal system. The emergence of nanotechnology-the "microscopic revolution"offers a paradigm shift toward precision molecular therapy. Nanoparticles, typically sized between 100-300nm, demonstrate a superior ability to infiltrate dentinal tubules 2000-5000nm compared to traditional agents. Smarter instrumentation and nanocoated files showed 20-30% increase in cyclic fatigue resistance and reduced friction. Clinical protocols for bioceramic sealers and nanofibrous scaffolds revealed enhanced biomimetic bonding and structural stability, supporting regenerative outcomes.

Keywords: Nanoparticles, Endodontics, Irrigation, Sealers, Smarter Instrumentation.

ABSTRACT NUMBER - 5

Title:Periapical Radiolucency : When Anatomy Mimics Pathology

Bhuvi P,Mohammad Fayaz ,Dr Priya N

V.S Dental College & Hospital, Bangalore, Karnataka

ABSTRACT

INTRODUCTION

Periapical radiolucencies are most frequently associated with pulpal necrosis and endodontic pathology. However, a subset of these lesions are of non-endodontic origin, often mimicking endodontic periapical lesions and resulting in misdiagnosis and treatment failure.

DISCUSSION

Periapical radiolucencies are commonly associated with inflammatory lesions of endodontic origin. However, not all periapical changes indicate pathology. Physiological periapical radiolucencies are usually observed in bone (maxilla or mandible) with absence of symptoms and no clinical signs of inflammation. These findings often correspond to enlarged periodontal ligament space, marrow spaces of foramina which may mimic pathological lesions. They lack the typical features of inflammatory periapical lesions such as progressive enlargement, ill-defined borders or associated symptoms like pain or swelling.

CONCLUSION

Not all periapical radiolucencies are of endodontic origin. Awareness of non-endodontic lesions, and routine histopathological evaluation are essential for accurate diagnosis along with appropriate management, thereby improving treatment outcomes.

ABSTRACT NUMBER - 6

Title:Exploring The Role Of Convolutional Neural Networks (CNN) In Endodontics And Radiographs Segmentation: A Literature Review

Aasiya Taskeen, Dr Saurav Gowda

Vydehi Institute of Dental Sciences & Research Centre, Bangalore, Karnataka

ABSTRACT

In the field of dentistry, there is a growing demand for increased precision in diagnostic tools, focusing on advanced imaging techniques such as CT,CB-CT, ultrasound and traditional IOPA. Traditional methods of diagnostic interpretation relying on the expertise of clinicians are subjected to human error, observer variability and fatigue. This review article outlines recent breakthroughs in the application of deep neural machine learning[CNN] in endodontics and establish a baseline for future research on AI augmented healthcare systems.

OBJECTIVE: The goal of this review is to provide a concise overview and methodology on the use of CNN in precise diagnosis , prognosis and standardize the measurement process, resulting in reliable outcomes, ultimately leading to improved treatment planning and patient outcomes in endodontics.

RESULT: 41 research articles were thoroughly reviewed. Researches conducted between 2011-2025were considered. With the use of different ML models, these studies assist clinicians in examination of root canal system anatomy, detecting periapical lesion, predicting the working length measurement and forecast caries detection.

CONCLUSION: The Neural network showed significantly higher level of performances overall in clinical diagnosis and treatment planning ,although this review acknowledged some limitations. However there are differences in performances of different models of CNN used in various studies.

ABSTRACT NUMBER – 7

Title:Minimally Invasive Dentistry

Shweta, Dr Prathima

KLE's Society's Institute Of Dental Sciences, Bangalore, Karnataka

ABSTRACT

Objective

To provide a concise overview of the philosophy, principles, diagnostic strategies, and clinical techniques of Minimally Invasive Dentistry (MID), emphasising preservation of natural tooth structure through conservative, biologically driven care.

Background

Minimally Invasive Dentistry represents a shift from the traditional "drill and fill" approach toward prevention, early detection, and minimal intervention in caries management. Its core principles include caries risk assessment, early diagnosis using visual, radiographic, and electronic methods, and disease control through diet modification, fluoride use, and improved oral hygiene. Initial lesions are managed by remineralisation using fluoride and bioactive agents. When operative treatment is required, conservative cavity designs and adhesive restorative materials are used to preserve healthy tooth tissue. Techniques such as atraumatic restorative treatment, air abrasion, chemomechanical caries removal, and laser or ozone therapy reduce tissue loss and patient discomfort. Biomimetic materials, including glass ionomer cement and composite resins, support adhesion, fluoride release, and tooth vitality.

Conclusion

Minimally Invasive Dentistry focuses on early disease control and conservative intervention, promoting tooth preservation, patient comfort, and long-term oral health.

ABSTRACT NUMBER - 8

Title:-Bridging the Gap: Awareness and Training of Undergraduate Dental Students in Managing Systemic Conditions”

Sanchita Agarwal,Gazal Srivastava, Dr. Swetha H.B

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ABSTRACT

Dental students frequently encounter patients with systemic diseases that can significantly affect dental treatment outcomes. Adequate awareness and clinical training during undergraduate education are essential for the safe management of medically compromised patients. However, gaps between theoretical knowledge and clinical preparedness among undergraduate dental students remain inadequately explored.

Objectives

1. To assess the level of awareness among undergraduate dental students regarding systemic conditions relevant to dental practice.

2. To evaluate the extent of training and preparedness of undergraduate dental students in managing medically compromised patients.

3. To compare awareness and training levels across different years of undergraduate dental education.

Methods: A cross-sectional questionnaire-based study will be conducted among undergraduate dental students (third year, final year, and interns) of a dental institution. A validated, self-administered questionnaire will be used to assess knowledge, training exposure, attitude, and confidence related to the management of systemic conditions in dental practice. Informed consent will be obtained from all participants prior to data collection. Data will be analyzed using descriptive statistics and appropriate inferential tests to compare responses across academic years.

Expected Results: The study is expected to reveal moderate theoretical awareness among undergraduate dental students with comparatively limited clinical training and confidence in managing patients with systemic conditions. Interns are anticipated to demonstrate higher levels of awareness and preparedness than junior undergraduate students. The findings are expected to highlight key areas requiring enhancement in undergraduate dental training.

Conclusion:

This study aims to identify gaps in awareness and training among undergraduate dental students in managing systemic conditions. The results are expected to provide evidence for strengthening undergraduate dental curricula through improved clinical exposure, interdisciplinary learning, and structured medical emergency training programs.

Keywords: Undergraduate dental students, systemic diseases, awareness, training, dental education,medically compromised patients.

ABSTRACT NUMBER - 9

Title:APEXIFICATION REIMAGINED: THE REGENERATIVE APPROACH.

Hibbha Mansoor,Dr. Khaja Iftheqar Ahmed

Sri Rajiv Gandhi College of Dental Science and Hospital, Bangalore, Karnataka

ABSTRACT

Root development relies on healthy pulp tissue and the activity of Hertwig's epithelial root sheath. In cases where trauma or infection causes necrosis of the pulp in an immature permanent tooth, further root development is halted, resulting in an open apex, thin dentinal walls and a fragile tooth. Conventional methods for apexification using calcium hydroxide or MTA may close the apex, but they do not permit continued root development, leaving the tooth structurally compromised.

Regenerative endodontics provides an alternative method for restoring the living tissues of the root canal and facilitating continued root maturation (known as apexogenesis) through biologically based methods. Conventional regenerative endodontic techniques rely upon stem cells harvested from the apical papilla, growth factors released from dentin and a naturally occurring scaffold to assist with the vertical development of the root canals. More recently, advances have been made in the field of regenerative endodontics, including stem cell transplantation, injectable hydrogel scaffolds, controlled-release bioactive growth factors, gene-activated matrixes and exosome-based therapies that are intended to create a more reliable and conducive environment for the regeneration of true pulp-dentin.

Research has demonstrated that performing regenerative endodontic treatments results in increased root length, dentinal wall thickness, and a closed apex as a result of biologically driven development of the root system as opposed to creating an artificial apical barrier or plug . This method represents a significant advancement in how immature necrotic teeth are managed by making use of biological factors that promote natural root development instead of reliance on artificial means to create a permanent seal for the root canal.

KEYWORDS: Regenerative dentistry ; immature necrotic teeth; apexogenesis ; pulp-dentin regeneration.

ABSTRACT NUMBER - 10

Title: Efficacious outcome of the extract of Costus Igneus (Insulin leaves) to resist the growth of Candida Albicans

Harshini Vishnu Das , Dr Roopavathi

Vydehi Institute of Dental Sciences & Research Centre, Bangalore, Karnataka

ABSTRACT **Introduction** : The plant Costus Igneus commonly known as Insulin plant is used for its antidiabetic property. Candida albicans is a commonly occurring opportunistic fungal pathogen responsible for various infections in humans, ranging from superficial mucosal infections to life-threatening systemic diseases. Hence an effort was made to investigate the antifungal activity of ethanol extract of the leaf of costus Igneus against the dimorphic fungi Candida albicans.

Objectives : The objectives of this study included to test the antifungal activity of Costus Igneus leaves extract against Candida albicans and to measure the Zone of Inhibition of different extract of Costus Igneus and to calculate the mean Zone of Inhibition .

Methodology : The study was an in vitro study. The Ethanolic extract of leaves of Insulin plant using Soxhlet extraction method . The agar well diffusion method was used to evaluate the antifungal property of the Insulin extract . The Insulin extract and the control Ethanol were placed on Sabouraud dextrose agar (SDA). C. Albicans were inoculated in 37° for 48 hours . Then the Zone of Inhibition was measured .

Results : Data was entered in Microsoft Excel and analyzed using Statistical Package for Social Sciences[SPSS] for Windows Version 22.0 Released 2013.Costus Igneus leaf extract showed significant antifungal activity (mean ZOI at 25,50,100 mg/ml = 10.36, 11.29, 13.82 respectively) against Candida Albicans while the control Ethanol showed comparatively less antifungal activity (mean ZOI at 25,50,100 mg/ml = 8.69, 9.96, 12.31 respectively) .

Conclusion : Costus Igneus leaf extract exhibited a significant antifungal activity against Candida Albicans .

Abstract Number - 11

Title: The Neglected Enemy: Coronal Leakage In Endodontics

Aryan Das,Samiksha R Dain Dr. Rupali Karale

KLE's Society's Institute Of Dental Sciences, Bangalore, Karnataka

ABSTRACT

Introduction: Long term success of endodontic therapy has traditionally been attributed to meticulous canal disinfection and apical sealing. However, accumulating evidence identifies coronal leakage also being a dominant and often underestimated cause of endodontic failure.Experimental and clinical studies demonstrate that microorganisms can penetrate obturated canals through inadequate coronal seals, even when apical obturation is technically sound.Exposure to saliva, failure of temporary restorations, delayed permanent restorations and material degradation create a pathway for intra radicular infection, challenging the long held apical-centric philosophy and methods to identify such variations in coronal leakage will be discussed in the paper.

Conclusion:Henceforth, microbial recontamination through the coronal route has been shown to precipitate late endodontic failure. Few evidence-based case reports from the literature will also be discussed in the paper. Endodontic success therefore demands an integrated approach in which coronal integrity is considered as biologically significant as root canal therapy itself.

ABSTRACT NUMBER - 12

Title: Patient Perception And Anxiety Toward Restorative Procedures: A Questionnaire-Based Study

Bhuvan R Divekar,Balaji S Reddy , Dr Swetha Mahesh

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ABSTRACT

Background / Purpose: Dental anxiety is a common psychological factor that can influence patient cooperation, pain perception, and overall treatment experience during restorative dental procedures. In conservative dentistry, anxiety-related behavioral responses during treatment may affect procedural flow and patient comfort. Understanding patient perception and anxiety is essential for improving patient-centered care.

Objective: To assess patient perception and anxiety toward restorative dental procedures and to evaluate the influence of anxiety-related behavioral responses on treatment experience.

Methods: A cross-sectional questionnaire-based study will be conducted among patients undergoing restorative dental procedures in the Department of Conservative Dentistry and Endodontics. A structured questionnaire consisting of 19 items will be administered. The questionnaire evaluates demographic details, pre-procedural anxiety, pain experience, communication and operator related factors, and anxiety-related behavioral responses during treatment. Responses will be recorded using a 5-point Likert scale .The collected data will be analyzed using descriptive statistics and correlation analysis.

Results: The study is expected to demonstrate varying levels of anxiety among patients undergoing restorative procedures. Preliminary analysis suggests that higher anxiety levels are anticipated to be associated with increased discomfort, difficulty in cooperation, and a perceived increase in treatment duration. Reassuring communication and appropriate operator behavior are expected to be associated with reduced patient anxiety and improved treatment experience.

Conclusion: Patient perception and anxiety significantly influence behavioral responses and treatment experience during restorative dental procedures. Identifying anxiety-related factors can help clinicians adopt improved communication and patient management strategies, thereby enhancing cooperation and optimizing outcomes in conservative dentistry.

ABSTRACTS FOR PAPER PRESENTATION HALL 6 – 1 TO 10

ABSTRACT 1

Title: When Molecules Speak: Biomarkers in Endodontics

Anurag Bhowmik, Deepthi S, Dr Rupali Karale

KLE Society's Institute of Dental Sciences; Bangalore, Karnataka

ABSTRACT

Introduction: Precise diagnosis of pulpal and periapical diseases remains a cornerstone of successful endodontic therapy. However, conventional diagnostic methods such as sensibility testing and radiographic assessment are limited by subjectivity and their inability to reflect the true biological status of the pulp. Emerging evidence from molecular and immunological studies highlights the diagnostic potential of biomarkers quantifiable biological molecules associated with inflammation, tissue degradation, microbial activity, and repair. Biomarkers including pro-inflammatory cytokines, chemokines, matrix metalloproteinases, angiogenic factors, and bacterial components have been identified in pulp tissue, dentinal fluid, gingival crevicular fluid, saliva, and periapical exudates, demonstrating significant correlation with pulpal pathology and clinical symptoms.

Conclusion: The incorporation of biomarker-based diagnostics offers a biologically relevant and objective approach to endodontic diagnosis, enabling improved differentiation of pulpal disease states and earlier detection of pathology. Although current use remains largely research-oriented, continued advancements in molecular diagnostics and point-of-care technologies may facilitate clinical translation, supporting evidence-based and personalized endodontic treatment strategies.

Keywords: Biomarkers; endodontic diagnosis; molecular diagnostics; precision endodontics

ABSTRACT 2

Title: Sip or Scoop? A Comparative Evaluation of Matcha and Protein Supplements on Composite Surface Integrity

Dr. Sirin Javed, Dr. Rashmi N

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ABSTRACT

Background:With the increasing global consumption of acidic beverages and whey protein supplements, there is a potential risk to the surface integrity of dental restorations due to their pH and lactose content.

Aim: The study aims to compare the effects of whey protein supplement and acidic beverages on the surface roughness of composite resin.

Materials and Methodology: Thirty extracted single-rooted teeth samples will be prepared (Class V cavity preparation) and restored with composite. The samples will be randomly divided into three groups and subjected to three immersion media namely; Whey protein concentrate (Group I), Matcha (Group II) and Distilled Water (Group III). The samples will be immersed for 12 hours and the pre immersion and post immersion surface roughness of all the samples will be observed under a Stereomicroscope.

Results: The results will be statistically analysed using the Kruskal-Wallis test.

Keywords: Beverages, composite resins, roughness, whey protein

ABSTRACT 3

Title: Comparative evaluation of non-pharmacological and pharmacological methods to reduce pain perception for stainless steel crown tooth preparation in children: a single-blinded pragmatic randomized

Bhairabee Sandilya ,Dr.Namratha T

Vydehi Institute of Dental Sciences and Research Centre , Bangalore, Karnataka

ABSTRACT

Introduction: Full coverage restorations in multi-surface caries and endodontically treated molars are essential for sustaining the structural integrity of the tooth and one of the commonly employed approach in pediatric dentistry is preformed stainless steel crowns. Subgingival tooth preparation causes soft tissue discomfort and bleeding while preparing and this contributes as a factor provoking anxiety to children directly and parents indirectly.Therefore the aim of the study is to compare a pharmacological intervention with a non pharmacological intervention in reduction of pain perception during tooth preparation for preformed stainless steel crowns in children aged 4-10 years.

Objectives: To evaluate and asses the effectiveness of 2% lignocaine gel impregnated into gingival retraction cord placed subgingivally and of virtual reality distraction glasses and to compare between the two.Materials and Methods: The study is a single-centre two arm explanatory, equivalence, pragmatic, randomized clinical study with a split-mouth study design and a balanced allocation ratio of 1:1 A total of 11 children meeting the inclusion criteria were included in the study after obtaining written informed consent from the parents/guardians and verbal assess from the children, who were allocated to any of the two groups by block randomization and the pain perception was recorded subjectively by the Faces Pain Scale- Revised, objectively by the FLACC Scale and physiologically by a pulse oximeter The data was subjected to statistical analysis.

Results: There is statistically significant difference in reduction of pulse rate in group 1 whereas in both the groups the pain perception has increased to before and during in both the groups.

Conclusion: Virtual reality glasses can be considered as an alternative approach to traditional use of local anaesthesia while assessing the operator satisfaction, they received certain difficulties while employing the virtual reality glasses.

Keywords: Stainless steel crowns, virtual reality distraction glasses, ignocaine, pain perception

ABSTRACT 4

Title: Glass Ionomer Cement: Evolution Through Innovation

Chinmoy Baruah, Jerica Johanna Cardozo, Dr. Krithika. D

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ABSTRACT

Glass ionomer cement (GIC) has remained as one of the cornerstone and fundamental restorative material in dentistry since its introduction in the late 1960s due to its chemical adhesion to enamel and dentin, fluoride release, biocompatibility, and anticariogenic potential. Conventional GICs, composed of fluoroaluminosilicate glass and polyalkenoic acids, were widely used for atraumatic restorative treatment, pediatric restorations, liners, bases, and cervical lesions. However, their clinical application was initially limited by low mechanical strength, brittleness, moisture sensitivity, and wear in stress-bearing areas. Contemporary developments have significantly expanded the clinical scope and success of GICs. Giomers, bioactive GICs, and low-viscosity formulations exhibit improved handling, early strength, esthetics, and marginal integrity, leading to higher clinical survival rates in cervical, pediatric, and preventive restorations. Packable and ceramic-reinforced posterior GICs demonstrate enhanced compressive strength and wear resistance, enabling their use in moderate load-bearing posterior restorations. The incorporation of nanoparticles and bioactive components such as nano-hydroxyapatite has improved remineralization, antibacterial activity, and tooth–material interaction, contributing to superior clinical outcomes. Amino acid- and boric acid-modified GICs further enhance fracture toughness and durability. Modifications in polyalkenoic acid composition optimize the setting reaction, ion cross-linking, and mechanical performance, directly influencing clinical longevity. The review highlights modified GICs showing improved marginal adaptation, reduced microleakage, faster placement, and higher clinical success rates. These advancements have transformed GIC from a basic restorative material into a bioactive, antibacterial, and patient-friendly system that supports minimally invasive dentistry and improves long-term oral health outcomes.

KeyWords :1.Bioactive 2.Polyalkenoic acid 3.Nano-hydroxyapatite 4.Remineralizarion

ABSTRACT 5

Title: Detection of MB2 Canals in Maxillary First Molars Using CBCT in an Indian Population

Dr.Anoushka Kaushik ,Dr Gangotri Saha

Vydehi Institute of Dental Sciences and Research Centre, Bangalore, Karnataka

ABSTRACT

Background / Purpose: A thorough understanding of root canal anatomy is fundamental to successful endodontic treatment. The maxillary first molar exhibits significant anatomical variability, particularly in the mesiobuccal root, where the presence of a second mesiobuccal (MB2) canal is common. Failure to detect and adequately treat the MB2 canal has been associated with persistent periapical pathology and endodontic failure. Cone-beam computed tomography (CBCT) has emerged as a reliable diagnostic tool for evaluating complex root canal morphology.

Objective:To evaluate the prevalence of MB2 canals in maxillary first molars in an Indian population using CBCT and to assess their association with age and gender.

Methods: A retrospective observational study was conducted on 145 CBCT scans of maxillary first molars obtained from an institutional database. The scans were evaluated independently in axial, sagittal, and coronal planes to determine the presence of MB2 canals. Demographic data including age and gender were recorded. The collected data were tabulated and analyzed descriptively to assess prevalence and distribution patterns.

Results: MB2 canals were identified in 64.1% of the evaluated samples. Although a slightly higher prevalence was observed in females (51%) compared to males (49%), the difference was not statistically significant. The highest frequency of MB2 canals was noted in the 20–30 years age group (30.3%), with a gradual decrease in prevalence observed with advancing age.

Conclusion: CBCT is an effective and reliable imaging modality for the detection of MB2 canals. The high prevalence of MB2 canals observed in this Indian population underscores the importance of meticulous canal exploration and the adjunctive use of advanced imaging techniques during endodontic treatment of maxillary first molars.

ABSTRACT 6

Title: COMPRESSION DOME CONCEPT

Padavi Lokesh, Thrupthi T, Dr. Keerthan Bollamma

Coorg Institute Of Dental Sciences, Virajpet, Karnataka

ABSTRACT

INTRODUCTION AND BACKGROUND:

Nature designed our teeth to primarily function in compression. Compression domes (Biodome) are structures that are designed into the enamel and range through several orders of magnitude from the macro down to the nano. When the Biodome is disrupted, the underlying dentine is then exposed to increased tension that increases with greater removal of critical areas of the Biodome, particularly the occlusal enamel. The most critical zones providing functional stability are associated with occlusal enamel. The more that can be retained, the more biomechanically stable the tooth remains in the long term.

CONCLUSION AND CLINICAL IMPLICATIONS:

The conventional model of restorations can lead to a compromised fracture resistance of the tooth in the long run. Therefore, this paper focuses on understanding the microanatomical and structural components of the tooth, enabling a biomimetic approach in restoring the compromised “Compression dome” of the tooth.

Keywords: Compression dome , Micro anatomical structures , Biomimetic approach

ABSTRACT 7

Title: Engineering stronger roots: The Reinforcing Potential of Niobium Pentoxide- Incorporated Calcium hydroxide

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ABSTRACT

Calcium hydroxide (CH) has been considered the gold-standard intracanal medicament in endodontics due to its potent antimicrobial action, tissue-dissolving capability and ability to induce mineralized tissue formation. Despite these advantages, extensive evidence from the past decade indicates that prolonged exposure of root canal dentin to CH adversely affects its biomechanical integrity. The high alkalinity of CH promotes degradation of the organic dentin matrix, particularly collagen fibrils, leading to decreased flexural strength, microhardness, and fracture resistance of root-treated teeth. These drawbacks necessitate modifications that preserve antimicrobial efficacy while minimizing structural compromise. Niobium pentoxide (Nb:O) has emerged as a promising bioactive additive in dental materials owing to its chemical stability, biocompatibility, and osteogenic potential. It has role as a nucleating agent for hydroxyapatite formation, facilitating biomineralization at the dentin-medicament interface. When incorporated into calcium hydroxide, niobium pentoxide is modulates ion release dynamics, reduce excessive alkalinity-induced collagen degradation, and enhance mineral deposition within dentinal tubules. This biomineralization potential may reinforce dentin microstructure, counteracting the weakening effects traditionally associated with calcium hydroxide therapy. Furthermore, niobium pentoxide demonstrates favorable physicochemical properties such as controlled solubility and chemical inertness, which may contribute to improved long-term dentin stability. Theoretical models suggest interaction between calcium, hydroxyl, and niobium ions could create a more balanced intracanal environment, supporting both antimicrobial action and preservation of dentin mechanical properties.

Conclusion:

From this standpoint supported by contemporary endodontic literature, niobium pentoxide-incorporated calcium hydroxide represents a biologically and mechanically advantageous intracanal medicament. Its potential to enhance dentin fracture resistance while maintaining therapeutic efficacy, underscores the need for further translational and clinical investigations.

Keywords: Calcium hydroxide, niobium pentoxide, dentin fracture resistance,intracanal medicament.

ABSTRACT 8

Title:Amniotic Membrane: Revolutionizing Endodontics

Haadia Zainab, Dr. Rashmi N

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ABSTRACT

Background: Human Amniotic Membrane (hAM), the innermost part of the placental membrane holds the potential to reform regenerative endodontics. In an era where Regenerative Endodontic Procedures (REPs) are rapidly gaining traction as adjuncts to conventional root canal treatments, there's an endless search for novel scaffolds to restore the native structure and function of the pulp–dentin complex rather than replace it with inert materials. Amniotic Membrane contains a plethora of growth factors, cytokines, and other bioactive molecules that play indispensable roles in tissue repair, wound healing, and Immunomodulation.

Clinical Applications: Amniotic membrane shows significant promise in tissue regeneration by facilitating revascularization and enhancing root canal treatment outcomes. Acting as a natural and biocompatible scaffold, it supports tissue repair and regulates inflammation, leading to faster healing and Reduced post-operative complications.

Conclusion: This review aims to elucidate the applications of Amniotic Membrane in endodontics, its current trends, future implications and means of overcoming limitations while highlighting the need for its clinical integration to revolutionize endodontics.

Key Words: Amniotic Membrane, Cytokines, Revascularization, Scaffold

ABSTRACT -9

Title: GAP TO GRACE: BIOCLEAR-GUIDED MIDLINE DIASTEMA CLOSURE

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ABSTRACT

Midline diastema is a common esthetic concern that can significantly affect smile harmony. Traditional restorative approaches may compromise emergence profile, contact form, or require excessive tooth preparation. The Bioclear Matrix System, used in conjunction with an injection-molded composite technique, offers a minimally invasive, non-surgical alternative for predictable diastema closure. A patient presented with an unaesthetic midline diastema in the maxillary anterior region with no underlying pathological etiology. After clinical and radiographic evaluation, closure using the Bioclear Matrix System was planned. Following isolation and adhesive protocol, anatomically contoured Bioclear matrices were positioned interproximally. Injectable composite resin was delivered to achieve optimal proximal contours and contact form. Finishing and polishing were performed to enhance surface smoothness and esthetic integration.

Complete closure of the midline diastema was achieved with a natural emergence profile, excellent marginal adaptation, and satisfactory symmetry. Periodontal tissues remained healthy, and the patient expressed high satisfaction with the esthetic outcome.

Bioclear-guided composite restoration provides a conservative, predictable solution for midline diastema closure, delivering excellent esthetic results while preserving tooth structure and periodontal health.

Keywords: Bioclear Matrix System, Midline diastema, Injection-molded composite, Esthetic dentistry, Case report

ABSTRACT -10

Title: Aging and Endodontics: Clinical Challenges and Practical Considerations

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ABSTRACT

With increasing life expectancy and heightened awareness of oral health, preservation of natural dentition in geriatric patients has become a key objective of contemporary dentistry. Endodontic treatment plays a pivotal role in achieving functional retention of teeth that serve both biological and prosthetic needs in the elderly. However, age-related systemic conditions, polypharmacy, and physiologic changes within dental tissues pose significant diagnostic and technical challenges. Endodontic treatment modalities in geriatric patients therefore require careful case selection, thorough medical evaluation, and modification of conventional techniques. Nonsurgical root canal therapy remains the primary modality, supported by advances such as electronic apex locators, nickel–titanium rotary instrumentation, enhanced irrigation protocols, and magnification aids to manage calcified canals effectively.

When appropriately planned and executed, endodontic therapy in geriatric patients demonstrates favorable outcomes, contributing to pain relief, maintenance of occlusion, and improved quality of life. Tailored, patient-centered approaches are essential for successful geriatric endodontic care.