Vol 4 : Issue 1: 2025

INDIAN ENDODONTIC SOCIETY

IES TIMES

Official Newsletter of Indian Endodontic Society

INDIAN ENDODONTIC SOCIETY

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From the Editor's Desk

The Endodontic-Periodontal Continuum: Still a Gray Zone?

Dear Readers,
Among the many intersections in dental specialties, none is as perplexing—or as persistently debated—as the endodontic-periodontal relationship. Even today, despite remarkable diagnostic advances, the endo-perio continuum remains a gray zone in everyday practice.

We are frequently confronted with lesions that defy neat categorization. Is it an endodontic infection with periodontal breakdown, or a periodontal lesion compromising the pulp secondarily? The symptoms often overlap—sinus tracts, deep pockets, radiolucencies—and without a meticulous approach, we risk misjudging the origin, and thereby, the treatment pathway.

Modern tools—CBCT imaging, electronic pulp testers, and cone beam-guided probing—certainly assist, but they do not replace the clinician's responsibility to interpret these findings in the broader context of disease progression, patient history, and restorability.

What complicates matters further is the ethical dimension. In a time when aggressive treatment can be easily rationalized, we must remember that choosing not to treat—whether due to poor periodontal prognosis or irreversible structural compromise—is also a clinical decision, and often the most ethical one.
So, is the endo-perio interface still a gray zone? In textbooks, perhaps less so. In practice, absolutely. But it is within this uncertainty that our judgment is most tested—and most needed.
Let us navigate it not with haste, but with humility, collaboration, and clarity.
Warm regards,
Dr. Vineeta Nikhil

MDS; FICD
Editor, IES Times

Chronicles of success

32nd IES National Conference Chennai Conference!!!

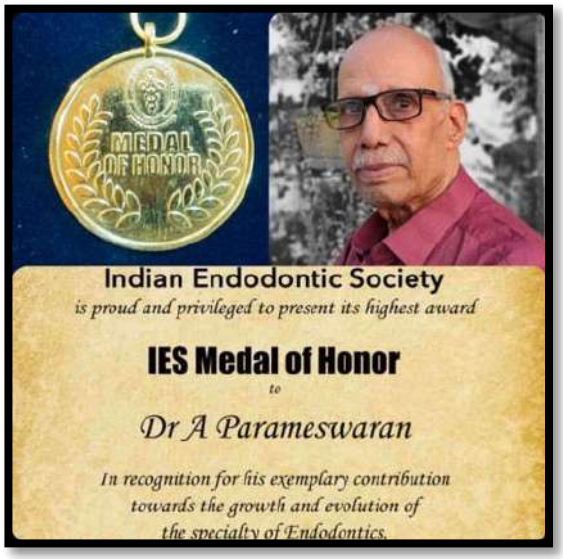
A Grand Beginning: IESCON 2024 Inaugural Ceremony

The **Inaugural Ceremony of IESCON 2024** was held in the heart of **Chennai**, a city known for its rich cultural heritage, architectural grandeur, and deep-rooted traditions in education and healthcare. The grand Chennai Trade Centre provided the perfect backdrop for an event of this magnitude, setting the stage for a remarkable scientific and academic exchange.

The success of IESCON 2024 was a testament to the **exceptional leadership and teamwork** of the organizing committee. **Dr. M Rajasekaran**, the **Congress Organizing Secretary**, and **Dr. M. Kavitha**, the **Organizing Chairperson**, spearheaded this event with **unwavering dedication and meticulous planning**. Their collective vision, along with the tireless efforts of the entire team, ensured that the conference was a resounding success, bringing together experts, scholars, and practitioners from across the country and beyond.

The inaugural ceremony was graced by distinguished guests - **Dr. A. Parameswaran**, fondly known as the **"Teacher of Teachers,"** and **Dr. K. Sridhar**, an **eminent plastic surgeon**. Their words of wisdom and encouragement set an inspiring tone for the conference, reinforcing the importance of innovation and excellence in Endodontics. The **spirit of collaboration and dedication** was evident throughout the ceremony, as IESCON 2024 stood as a **shining example of teamwork and commitment** to advancing the field of Endodontics.

Medal of Honour awarded to Dr Parameswaran Anantanarayanan



IES Times New Issue Launch

The conference attracted 1,016 participants and featured 450 paper presentations, 180 poster presentations, 8 pre-conference courses, and 12 keynote speakers.

"Laying the Foundation: Insights from Pre-Conference workshops"

The Pre-Conference Courses of the 32nd National Conference of the Indian Endodontic Society, held on 1st, 2nd and 3rd October 2024, featured a series of hands-on workshops conducted by esteemed experts, offering participants an opportunity to refine their clinical skill. These sessions were held at various venues, including Thai Moogambigai Dental college, Tamil Nadu Government dental college and hospital, SRM Dental College, Ramapuram Campus, and Meenakshi Ammal Dental College. **Dr. James Gutmann** delivered a compelling session on Live Demo & Advanced Lecture on Posterior Endodontic Microsurgery, providing valuable insights into microsurgical techniques. **Dr. Zaher Altaki** conducted a specialized workshop on Micro Endosurgery Using Piezotome, featuring a live demonstration and hands-on training. **Dr. Vivek Hegde and Dr. Gopi Krishna** led the Magnification Masterclass, emphasizing advanced visualization techniques for precision in endodontic procedures.

Dr. Deepak Mehta presented a course on Posterior Indirect Restorations, highlighting minimally invasive adhesive techniques to enhance restorative outcomes. **Dr. Isha Sablok** delivered an insightful session on CBCT in Endodontics, stressing its pivotal role in diagnosis and treatment planning. Meanwhile, **Dr. Agam Bhatnagar** conducted an innovative workshop titled Beyond the Routine: A Workshop for Tomorrow's Practitioner, encouraging participants to explore advanced clinical approaches. The pre-conference sessions concluded with **Dr. B. Mohan** conducting a workshop on Bonding to Root Canal Treated Teeth & Preparation Design, integrating digital dentistry concepts into endodontic practice.

IESCON 2024 TRADE SHOW

The **Trade Show at IESCON 2024** was a **grand showcase of innovation and cutting-edge technology** in Endodontics, held at the **Trade Centre, Chennai**. Spanning the two days of the conference, the exhibition brought together **leading sponsors, dental industry pioneers, and technology innovators** , offering attendees an exclusive glimpse into the latest advancements in materials, instruments, and digital solutions.

Pre-Conference in Focus






Keynote Sessions Unveiled

The Keynote Sessions at IESCON 2024 witnessed a full-house audience, eagerly engaging with a distinguished line up of renowned national and international speakers. Experts from across the globe shared their invaluable insights, addressing critical challenges and innovations in endodontics. With thought-provoking discussions and cutting-edge advancements, the sessions sparked immense enthusiasm and interaction among attendees.

Dr. Nitesh Tewari delivered a keynote session on "Symposium on Cracks & Fractures – Dental Trauma Files," discussing the complexities of dental trauma and management strategies. **Dr. Anil Kishen** presented the RC Kakar Oration titled "Cracks and Fractures in Endodontically Treated Teeth: The Hard Truth," highlighting challenges and solutions in endodontic treatments. **Dr. Zaher Altaki** conducted a symposium on "Endodontic Microsurgery – How to Perform Endodontic Microsurgery as an Endodontist: Piezo-Driven Approach," providing insights into advanced surgical techniques. **Dr. James Gutmann** shared his perspective in a symposium titled "Endodontic Surgery in Premolars and Molars – Gutmann's Perspective," discussing surgical approaches in complex cases. **Dr. Saikalyan and Dr. Ruchika Roongta Nawal** led an innovation symposium on "Navigating the Dental Product Translation Life Cycle in 8 Simple Steps," focusing on the development and implementation of dental products.

Dr. Mohammad Hossein Nekoofar delivered a symposium on "Endo-Perio Clinical Challenges – Endo-Perio Lesions: Getting to the 'Root' of the Problem, A Multidisciplinary Approach," addressing the complexities of endodontic-periodontic lesions. **Dr. Neel Bhatavadekar** presented a symposium on "Endo-Perio Clinical Challenges – Key Periodontic Insights for Endodontics," offering valuable periodontal perspectives for endodontic practice. **Dr. Vivek Hegde** conducted a symposium on "Shaping Strategies – Art & Science of Shaping the Diverse Root Canal Anatomies," discussing techniques for managing various root canal anatomies. **Dr. Norihiro Sawada** led a symposium titled "Shaping Strategies – Achieve Glide Path: Get Set Go," focusing on strategies to establish glide paths in root canals. **Dr. Deepak Mehta** presented an "Endo Tech Symposium – Beyond Endodontics: Tailoring Restorative Solutions for Endodontically Treated Teeth," emphasizing restorative approaches post-endodontic treatment. **Dr. Gopi Krishna** conducted an "Endo Tech Symposium – CBCT Integrated Endodontic Practice: A Clinical Insight," highlighting the integration of CBCT technology in endodontic practice. These sessions provided attendees with comprehensive insights into current challenges, innovative techniques, and advancements in endodontic practice.

These keynote lectures, delivered by some of the most respected names in the field, provided a deep dive into contemporary endodontic practice, equipping participants with knowledge that will shape their clinical approach. The overwhelming response reaffirmed the significance of these expert-driven discourses, making them a highlight of IESCON 2024.

Beyond the Lectures: Connections & Celebration

IES Executive Committee 2024-25

WINNERS AND AWARDS

IES-PRIDE Innovation Challenge 2024: Fostering Research and Entrepreneurship

The IES Platform for Research & Innovation for Dental Entrepreneurship (PRIDE) launched the IES-PRIDE Innovation Challenge 2024 to encourage cutting-edge developments in dentistry. This initiative provided academicians, clinicians, and postgraduate students a platform to present innovative ideas aimed at transforming dental practice and technology. The challenge was conducted in two phases-First Phase (Screening): Applicants submitted a concept note outlining their proposal in a prescribed format. A panel of renowned experts from screened the submissions. In the Second Phase (Presentation), 10 shortlisted applicants were invited to present their ideas at IESCON 2024, Chennai. They pitched their innovations before a distinguished panel comprising leaders, subject-experts, and representatives from premier funding bodies and healthcare industries. The winners of the IES-PRIDE Innovation Challenge 2024 were awarded a financial grant of **Rs. 5 lakhs** to support the development and implementation of their projects. The **Indian Endodontic Society** provided expert mentorship and validation support, while the **Dental Technology Innovation Hub (DTIH), Maulana Azad Institute of Dental Sciences, New Delhi**, offered incubation, clinical testing, and regulatory assistance. **Prevest DenPro Limited** contributed industry insights and helped translate projects into marketable products.

PHASE 2 WINNERS ANNOUNCED!

Dr. Suneel Kumar Chinni from Andhra Pradesh secured the First Prize for his ground breaking proposal, "Endobank – A Database App with Chatbot Integration." His innovative concept stood out for its potential to revolutionize data management in Endodontics. Adding to the celebration, IES PRIDE honored the winner of the Innovation Grant of INR 100,000, recognizing outstanding contributions to advancing Endodontic practice.

IES Case Competition 2024: Celebrating Clinical Excellence in Endodontics

The Indian Endodontic Society successfully hosted the IES Case Competition 2024, a prestigious platform that recognizes outstanding clinical skills in Endodontics. The competition aimed to encourage innovative thinking and excellence in case documentation among students and clinicians across India. Participants presented complex cases, demonstrating their expertise in diagnosis, treatment planning, and execution.

With generous support from Team Woodpecker, awards worth INR 8,00,000 were distributed to acknowledge and reward the top performers. The competition was conducted in two phases: the Online Most Popular Award, determined by public engagement, and the Onsite Expert Recognition Awards, evaluated by an expert panel.

Onsite Expert Recognition Award Winners

First Place: Dr. Lalit Likhyani – Winner of 812 MT Endo Motor and Apex Locator
Second Place: Dr. Ashish Mittal & Dr. Shaili Mehta – Winners of Yoshi Ai Motor each
Third Place: Dr. Garima Poddar, Dr. Kanagadurga R & Dr. Susmita Ghosh – Winners of TFRK Terauchi File Remover Kit each
Fourth Place: Dr. Niranjan Vatkar, Dr. Kshitij Sameer Joshi, Dr. Alex Immanuel & Dr. Sanil Satish Natekar – Winners of D600/U600 Ultrasonic Scaler each

Online Most Popular Award Winners

First Place: Dr. Kanagadurga R – Winner of Fi-G/Fi-P Obturation System
Second Place: Dr. Kshitij Sameer Joshi – Winner of Endo Radar Plus Endo Motor with Apex Locator
Third Place: Dr. Alex Immanuel Y – Winner of Ai Pex Apex Locator with Pulp Tester.

Other Finalists

Dr. Susmita Ghosh, Dr. Shaili Mehta, Dr. Sanil Satish Natekar, Dr. Niranjan Vatkar, Dr. Lalit Likhyani, Dr. Garima Poddar, and Dr. Aashish Mittal were recognized as finalists and received Dr. Yoshi Broken File Retrieval Tips.

The IES Case Competition continues to serve as a national platform for showcasing clinical expertise, encouraging knowledge-sharing, and promoting excellence in Endodontic practice. Congratulations to all winners and participants for their dedication and achievements.

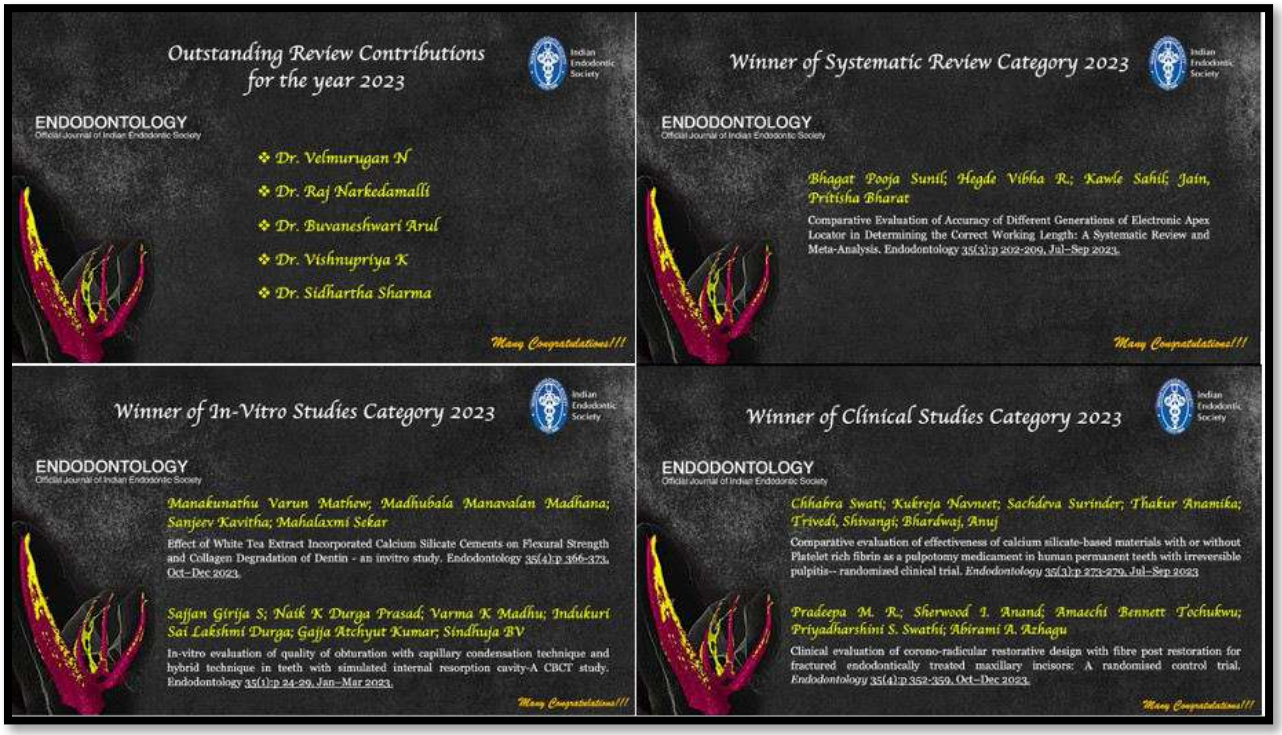

3000


– worth


worth

ENDODONTOLOGY AWARDS

The **Indian Endodontic Society (IES)** proudly felicitated the **winners of articles** published in *Endodontology*, the official journal of IES (www.endodontologyonweb.org), across various categories, along with the **outstanding reviewers** who contributed significantly by providing the maximum number of reviews in a timely manner for the year 2023. They were **honored during the Award Night** at the **Annual National Indian Endodontic Congress** in **Chennai on 4th October 2024**. IES, along with *Team Endodontology*, takes immense pride in celebrating the **authors whose articles were recognized** and in honoring the **reviewers** whose dedication and expertise played a pivotal role in the journal's growth.




IES TIMES
You are our strength.

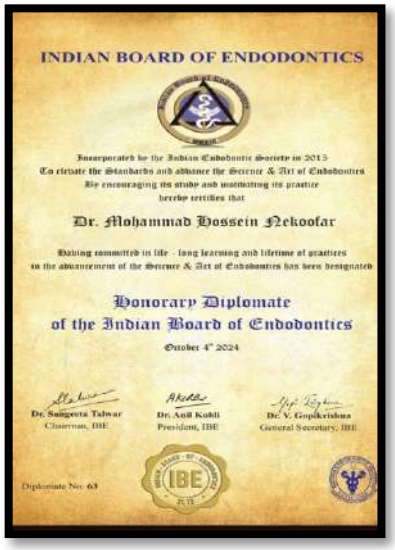

Madhubala Manavalan Madhana, Sanjeev Kavitha, Mahalaxmi Sekar
Priyadharshini S, Swatha Abirami
You are our strength.
Dr Velmurugan N
Reviewer Aw

Annual Research Grant Award 2024

Indian Endodontic Society is proud to present the IES Annual Research Grant Award 2024 to the following FIVE research projects with a grant of INR 50,000 each. This is a sincere effort from IES to promote quality endodontic research projects emanating from our country.

IBE DIPLOMATE AWARD CEREMONY 2024

The Indian Endodontic Society (IES) and the Indian Board of Endodontics (IBE) proudly felicitated 11 distinguished endodontists who successfully cleared the IBE Board Examinations in 2024. In addition, Dr. M. H. Nekoofar from Iran was honoured with the Honorary Diplomate status in recognition of his exceptional contributions to the field of Endodontics on a global scale. The prestigious ceremony took place on 4th October 2024 during the Annual National Indian Endodontic Congress in Chennai. The event was graced by Prof. Emeritus Dr. James Gutmann, who served as the external examiner, alongside Dr. Anil Kishen, a Board Member of IBE. Their remarkable achievements serve as an inspiration for the next generation of clinical endodontists in India. IES and IBE commend their dedication, excellence, and pursuit of higher standards in Endodontics.



The following candidates were conferred with the Diplomate status of IBE:

Dr. S. Mahalaxmi, Dr. Buvaneshwari A, Dr. C. Sooriaprakas, Dr. Aarti A. Bohora, Dr. Pankaj Rao,

Dr. Aishwarya V, Dr. Sarita Bhandari, Dr. Ameya Paralikar, Dr. Saumya Johri, Dr. Tarun Kumar Singh

Appreciation awards





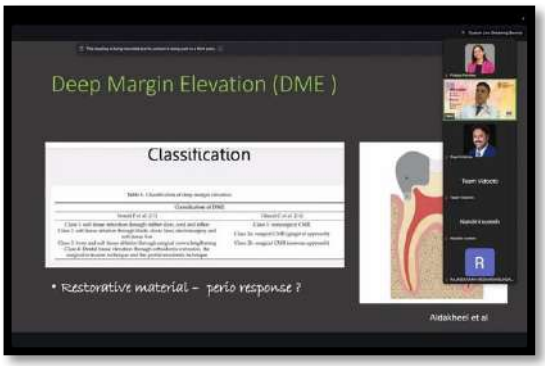




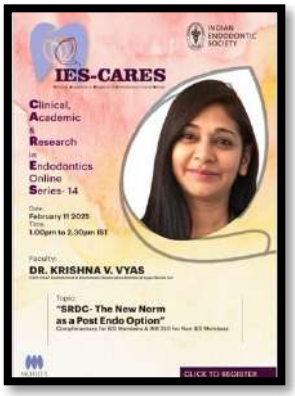
IES CARES -13

IES-CARES Online Event – 13 was successfully conducted on 12th December 2024, from 1:00 PM to 2:30 PM IST, featuring an insightful lecture on "Must-Know Periodontal Perspectives for Endodontists." The session was led by Dr. Neel Bhatavadekar, Diplomate, American Board of Periodontology, and ITI Fellow, who provided a deeper understanding of the critical periodontal factors influencing endodontic and restorative outcomes. The lecture covered essential aspects such as: Crown lengthening procedures to maintain biologic width and improve restorative success and Subgingival restorative materials and their impact on periodontal health.

The session highlighted the importance of an interdisciplinary approach, equipping endodontists with practical insights to enhance patient outcomes. Engaging discussions and clinical case references made the event highly beneficial for attendees.



IES CARES-14

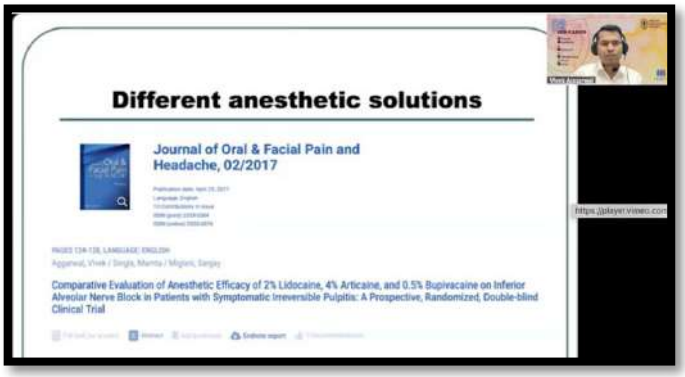


IES-CARES 14 was successfully conducted as online event for 2025, held on February 11th, 2025, from 1:00 PM to 2:30 PM IST. The lecture, titled "SRDC - The New Norm as a Post Endo Option," was presented by Dr. Krishna V. Vyas, CEO, Chief Endodontist, and Biomimetic Restorative Dentist at Vyas Dental Inn. Dr. Vyas provided an insightful exploration into Stress Reduced Direct Composite (SRDC) Restorations, highlighting their efficacy as evidence-based alternatives to full coverage crowns. She emphasized a biomimetic approach to restoring structurally compromised teeth, aiming to regain lost structural integrity.

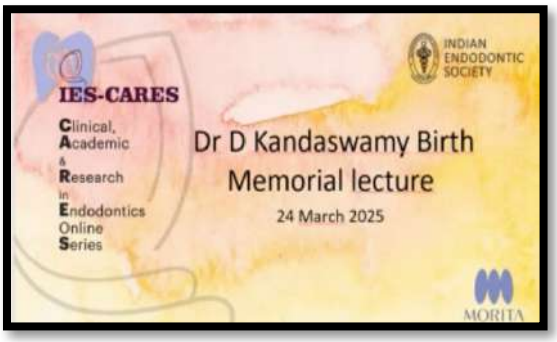
IES CARES-15

The Indian Endodontic Society successfully hosted the latest IES-CARES online event on March 19, 2025. The session featured Dr. Vivek Aggarwal, Professor at the Faculty of Dentistry, Jamia Millia Islamia, New Delhi, who delivered a comprehensive lecture on "Management of Hot Tooth – Evidence-Based Recommendations.

The session delved into the complexities of managing a hot tooth, a clinical challenge that often tests an endodontist's skill and decision-making. Dr. Aggarwal provided an in-depth analysis of anesthetic strategies, and recent advancements in pharmacological and procedural approaches to enhance patient comfort and treatment predictability. With an active participation of IES members and attendees from across the country, the session fostered a dynamic exchange of knowledge.



IES CARES- 16



The IES-CARES online event held on March 24th, 2025, commemorated the Birth Memorial of the late Dr. D. Kandaswamy with a memorial oration delivered by Professor Dr. Giampiero Rossi-Fedele from the University of Adelaide, Australia. The lecture, titled "Root Canal Irrigants," provided an in-depth analysis of contemporary irrigation solutions, their mechanisms of action, and their impact on the success of endodontic treatments.

The session was adeptly moderated by Dr. Venkateshbabu Nagendrababu and Dr. M. Kavitha. Their expertise facilitated a dynamic and insightful discussion, enriching the learning experience for all participants. The Indian Endodontic Society extends its gratitude to the speakers, moderators, and attendees for their active participation, contributing to the event's success and the advancement of endodontic knowledge.

The IES-CARES platform continues to serve as a valuable educational initiative, offering complimentary access to IES life members and extending learning opportunities to non-members. Those who missed the session can access it through the IES CARES portal by updating their membership details on the IES website and logging in at IES CARES.

For membership queries, participants can reach out to the IES Head Office at info@ies.org.in or via WhatsApp at +91 98411 61131.

World Endodontic Day 2024: A Global Celebration of Tooth Preservation

World Endodontic Day 2024 was celebrated with great enthusiasm by endodontists across the globe, marking a significant tribute to the specialty dedicated to saving teeth and preserving smiles. Many joined the movement by updating their profile pictures with the **IFEA World Endodontic Day frame**, proudly displaying their commitment to saving natural teeth.

Across different countries, lectures, hands-on workshops, and public awareness campaigns were organized to highlight the importance of root canal treatment in maintaining oral health. Dental colleges conducted student-led activities, interactive sessions, and patient outreach programs, engaging both professionals and the public in meaningful discussions about the role of endodontics in modern dentistry. Social media platforms were flooded with messages, success stories, and testimonials, reinforcing the impact of endodontists as tooth saviours worldwide. In several regions, free dental check-ups, live demonstrations, and interactive Q&A sessions were conducted to demystify endodontic procedures and emphasize their significance. Professional organizations and societies arranged webinars featuring renowned endodontists, sharing insights into the latest innovations and techniques in root canal therapy.


KSR Inst. of Dental Science
Goenka Research Institute of Dental Science
ASHWAMSAKTHI DENTAL COLLEGE AND HOSPITAL
TEAM DDC
Inderprastha Dental College
Tagore dental college
WORLD ENDODONTIC DAY
Sri Ramakishbna Dental Colleg
KIMS Dental college and Hospital
GDC - Ahmedabad
GDC&H, Hyderabad


Chettinad Dental College
Azeezia Dental College, Kollam
WORLD ENDODONTIC DAY
Meenakshi Ammal Dental Colle
Amrita School of Dentistry
VSPM's Dental Colle


K M Shah Dental College
KGMU - Lucknow
Jamia Millia Islamia Dental College
AIIMS - New Delhi
ITS Dental College
Sardar Patel Dental College
AIIMS - Nagpur
Saraswati Dental College,Lucknow
WORLD ENDODONTIC DAY

World Endodontic Day Symposium 2024

On October 16, 2024, the World Endodontic Day Symposium brought together some of the most esteemed names in endodontics for an insightful and thought-provoking session. Organized under the International Federation of Endodontic Associations (IFEA), the symposium featured engaging discussions, cutting-edge research, and expert insights into the evolving landscape of endodontics. The event commenced with the IFEA anthem, setting the tone for a day dedicated to endodontic advancements and global collaboration. Dr. Gopi Krishna, President-Elect of IFEA, provided an overview of World Endodontic Day, highlighting its significance in promoting awareness and progress in the field. Following this, Dr. Elisabetta Cotti, President of IFEA, delivered the Presidential Address, emphasizing the collective efforts of endodontists worldwide in preserving natural teeth and advancing patient care.

The scientific sessions began with Dr. Domenico Ricucci's compelling lecture on the "Evolution of Histological Basis for the Treatment of Pulpal Diseases." His presentation shed light on the intricate histological aspects of pulpal diseases and how they guide treatment protocols. A stimulating Q&A session, moderated by Dr. Elisabetta Cotti and Dr. Alan Nerwich (Past President of IFEA), followed, allowing participants to delve deeper into the topic. Dr. Paul V. Abbott then presented his lecture, "What's in a Name? A Review of Endodontic Diagnosis," providing an in-depth analysis of diagnostic terminologies and their clinical implications. His session was followed by another engaging Q&A discussion, led by Dr. Hyeon Cheol Henry Kim (Secretary of IFEA) and Dr. Patrick Taylor (Treasurer of IFEA). The symposium served as a remarkable platform for knowledge exchange, fostering discussions on fundamental and contemporary aspects of endodontic science. The event successfully reinforced the global commitment to advancing endodontic education, research, and clinical excellence, making World Endodontic Day 2024 a truly memorable occasion.

All India FM Radio Campaign for World Endodontic Day

On **October 16, 2024**, the Indian Endodontic Society successfully launched a **nationwide FM radio campaign** to raise public awareness about **Endodontics and the importance of saving natural teeth**. A single impactful message—**"Endodontists are dental specialists in saving natural teeth"**—was broadcast across **22 cities in India** in **12 regional languages**, including **English, Hindi, Tamil, Bengali, Malayalam, Punjabi, Marathi, Kannada, Odia, Telugu, Assamese, and Gujarati**. This campaign aired on leading **FM radio channels** in designated cities during **prime-time slots (7:00–11:00 AM & 5:00–11:00 PM)** as part of the **World Endodontic Day celebrations.**

Through this widespread initiative, IES reinforced the importance of **Endodontic care** and its role in ensuring **a healthier nation—because Healthy Teeth Make a Healthy Nation!**

The World Endodontic Day celebration by IFEA 48 country members showcased a unified global effort to promote awareness about Endodontics. Representatives from 48 nations came together, symbolizing the shared mission of preserving natural teeth and advancing Endodontic excellence worldwide.

Exclusive Opportunity for IES Members at AEEDC Dubai 2025

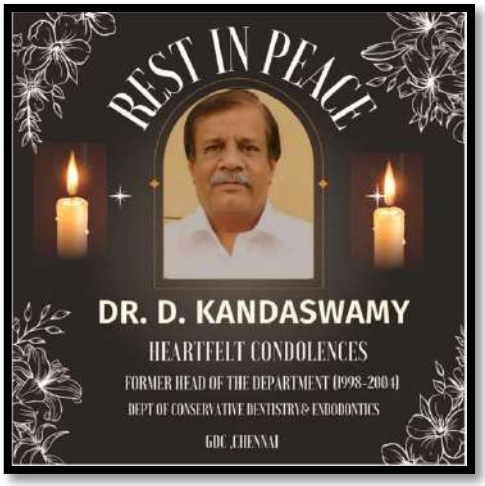
The Indian Endodontic Society was delighted to offer its members an **exclusive 60% discount** on registration for **AEEDC 2025**, the **UAE International Dental Conference & Arab Dental Exhibition**—the largest dental trade and scientific congress in the Middle East.

This prestigious event brought together thousands of dental professionals from across Asia, offering unparalleled trade deals for clinicians, alongside a stellar lineup of international speakers and hands-on workshops.

IES remains committed to providing its members with **exclusive educational and networking opportunities**, ensuring access to global advancements in dentistry and endodontics.

A Tribute to Dr. D. Kandaswamy: A Guiding Light in Endodontics

The endodontic fraternity of India has lost one of its most cherished and ever-smiling gems fondly known as Kandy Sir. Dr. Deivanayagam Kandaswamy was a born leader who had the rare ability to bring everyone together, an orator par excellence who could blend humor with profound academic insights, and a passionate clinician with a special interest in esthetic dentistry. Above all, he was a gentle soul whose kindness and wisdom touched countless lives. As his students and colleagues, Indian Endodontic Society mourns this irreplaceable loss and take a moment to reflect on the invaluable lessons he imparted to us all.



Honouring His Legacy

To pay tribute to Dr. Kandaswamy, the Indian Endodontic Society organized both online and offline condolence meetings, where students, colleagues, and admirers came together to share heartfelt memories and honour his remarkable contributions to dentistry.

Dr. D. Kandaswamy Memorial Online Lecture

Continuing his legacy of academic excellence, the Dr. D. Kandaswamy Memorial Online Lecture was delivered by Dr. B. Mohan, a renowned esthetic dentist and the first postgraduate student of Kandy Sir on 9th Jan 2025.

Homage to a Pioneer

Dr M R Srinivasan
BDS; MDS
President, Indian Endodontic Society
President, CDEA, Tamilnadu
HOD, Sri Venkateswara Dental College and Hospital

In Loving Memory of Dr Kandaswamy

Dr D. Kandaswamy, MDS, FDS RCPS (Glasg), was an accomplished dental professional with over 34 years of teaching experience, including 20 years in leadership roles. The dental fraternity mourns the passing of a stalwart — **Dr Kandaswamy**, an iconic figure in Indian dentistry and one of the leading voices in the field of **Conservative Dentistry and Endodontics**. With over 40 years of devoted service as a clinician, academician, and mentor, Dr Kandaswamy's life was a remarkable testament to what it means to heal with skill, teach with passion, and live with integrity.

Born with a natural affinity for the sciences and a deep sense of empathy, Dr Kandaswamy pursued dentistry at **Madras Dental College**, one of India's most prestigious dental institutions. Even during his student years, he displayed an innate precision and thoughtfulness that would later define his work as an endodontist. After obtaining his **BDS**, he specialized in **Conservative Dentistry and Endodontics**, an emerging field at the time.

In 1983, he established **Eswari Dental Clinic** in **Anna Nagar, Chennai**. From humble beginnings, the clinic became synonymous with excellence, care, and trust. He was first clinician to introduce the operating microscope into routine dental practice in the late 1990s at a time when magnification in dentistry was still a novel concept. Over the years, Dr Kandaswamy treated thousands of patients, many of whom became lifelong patrons, referring their children and grandchildren to the very same chair where they once sat. His reputation as a kind, meticulous, and highly skilled professional drew patients from all over the city and beyond.

What set Dr Kandaswamy apart was not just his clinical ability but his commitment to **Conservative Dentistry** as a philosophy. He believed in conserving what nature had crafted, intervening only when necessary, and always with the patient's long-term oral health in mind. His mastery in restorative dentistry focusing on enhancing dental aesthetics while preserving function and oral health requires a special mention. He was one of the very few conservative dentists to work on composite resin materials in the early 1980s.

Beyond his clinical practice, Dr Kandaswamy was a revered academician and teacher. His tenure as **Dean of the Faculty of Dental Sciences at Sri Ramachandra Institute of Higher Education and Research (SRIHER)** was marked by innovation, academic rigor, and mentorship. He mentored a generation of dental students, many of whom have gone on to become educators, specialists, and leaders in their own right. He was appointed as an **Adjunct Professor at the KSR Institute of Dental Science and Research (KSRIDSR)**, a role that allowed him to continue shaping young minds. Even in his later years, he remained committed to education, continuing dental education (CDE) programs, and curriculum development.

Dr Kandaswamy was an active member of the **Indian Dental Association (IDA)** and the **Indian Association of Conservative Dentistry and Endodontics (IACDE)**. Dr. Kandasamy holds the unique distinction of being the only individual to have served in **all major administrative positions** in **Indian Association of Conservative Dentistry and Endodontics (IACDE)**. He is widely admired for his exceptional organizational skills, particularly in organising dental conferences at both national and international levels. His meticulous planning, attention to detail, and ability to bring together experts and delegates seamlessly have made every event under his leadership a resounding success. His participation in national conferences, published academic papers, and contributed to discussions that shaped clinical protocols and guidelines. His lectures have consistently been among the most sought-after presentations at dental conferences. Known for his clarity and engaging delivery of lectures, he has a unique ability to simplify complex concepts and present them with clinical relevance. His sessions not only educate but also inspire, making him a favourite among students, practitioners, and peers alike.

What made him truly remarkable was the balance he struck between clinical practice, academia, and personal life. He was a devoted family man, a gentle friend, and a mentor to many. Patients often spoke of Dr Kandaswamy with warmth that extended far beyond their dental visits. His passing is not just a loss to those who knew him personally, but to the entire field of Conservative Dentistry and Endodontics in India. Yet, his influence continues through every successful case his students treat, every ethical decision they make in their clinics, and every patient who receives thoughtful, conservative care because of the standards he helped set.

Today, as we reflect on the life of **Dr Kandaswamy**, we are reminded of the rare blend of qualities that defined him—clinical brilliance, academic insight, ethical practice, and above all, humanity. He showed us that dentistry, at its core, is not just about teeth—it's about people, trust, and the unwavering desire to serve.
His life's work continues to inspire. His values endure. And in the hearts of his family, his students, his patients, and his colleagues, **Dr Kandaswamy lives on.**

Rest in peace, sir. Your light will never fade.

Tête-à-tête with maestro

Dr Filippo Cardinali
DDS; MSc

Active Member of the Italian Society of Endodontics.
Certified Member of the European Society of Endodontology.
Associate Member American Association of Endodontists.
Gold Member of Styleitaliano Endodontics.

In this edition, we are honoured to feature Dr. Filippo Cardinali, a distinguished endodontist known for his expertise, innovation, and contributions to the field. With years of experience and a passion for advancing endodontic practices, Dr. Filippo has worked with leading professionals worldwide, shaping the way modern endodontics is practiced today.

We had the privilege of asking him a few questions about his journey, perspectives, and the future of endodontics. Read on as he shares valuable insights and expert advice.

Q. What motivated you to specialize in endodontics, and who were the mentors or role models that guided you in your early career?

I graduated in 1992. As you probably know, in Italy, Endodontics is not yet recognized as a specialty, so there is no postgraduate program in Endodontics to become a specialist, though you can find a Master's in Endodontics. At that time, the only way to improve your knowledge was to participate in congresses or read scientific books and papers. There are three people who were fundamental in my education. Dr. Roberto Mancini, my roommate during university, sparked my curiosity for endodontics and taught me the basics of the field. At that time in Italy, it was mandatory to do military service, so after graduation, I went to Cagliari in Sardinia and worked for a year at the Military Hospital. The services were limited to emergencies, patients with pulpitis, abscesses… basically all endodontic emergencies. That was probably the foundation of my training. Then, in Sardinia, I had the fortune of meeting and spending time at the practice of Dr. Gherard Seebergher (Past President of FDI), who helped me understand what it means to work while seeking excellence in the best interest of the patient. After completing my military service, I began attending the Italian Society of Endodontics, and after a few years, I took training courses with Dr. Fabio Gorni, with whom I have collaborated for almost 20 years and with whom I share professional projects. Roberto, Gherard, and Fabio are more than mentors to me; they are like big brothers, and I love to share time with them whenever we have the opportunity.

Q. Could you share some of the key milestones or major achievements in your career?

Honestly, I don't think I've achieved anything particularly extraordinary. I'm a Private Practitioner. Today, I teach in some postgraduate Master's programs in Italian and foreign Universities, but I'm not a University professor, I'm just a clinician; University Professors are the ones who dedicate their professional live to teaching and educating future colleagues, and I admire them greatly. In the Italian Society of Endodontics, I've held various roles on the board up to become President. My greatest achievement, perhaps, has been overcoming my fears; I come from a small village with 6,000 inhabitants, and when I was young, I was very shy. I never would have imagined having so many friends around the world, whom I met through endodontics, but the joy of sharing moments with them goes beyond just endodontics. Another thing I am proud of is that I achieved these results by working hard and with patience, without shortcuts, but most importantly, without ever losing touch with the things that matter in life, like family and friends.

Q. How has endodontics evolved since you began practicing, and what do you consider the most ground breaking advancements in the field?

In my practice, I have replaced tools and techniques over the years. Many game changers have arrived, such as NiTi rotary files, ultrasound tips, CBCT, bioceramic materials…... But honestly, if you ask me what the most important tool, I can't live without is, it's definitely still the apex locator.

Q. Once formed, ledges can be difficult for clinicians to manage. Given your expertise in ledge management, could you share insights on the latest techniques used to address this challenge?

Ledge creation is the most common mistake during shaping. What is important to understand is that we can create ledges even with the most advanced and expensive rotary files, and the ledge is always an iatrogenic damage caused by the clinician due to an incorrect approach to the canal during shaping. Of course, once created, we do manage it, and the management depends on many factors, such as the position of the ledge. The introduction of heat-treated NiTi rotary files has definitely provided clinicians with an additional option for managing this, but in any case, manual instrumentation still plays a crucial role.

Q. What ongoing professional development activities do you pursue to stay updated with advancements in endodontics?

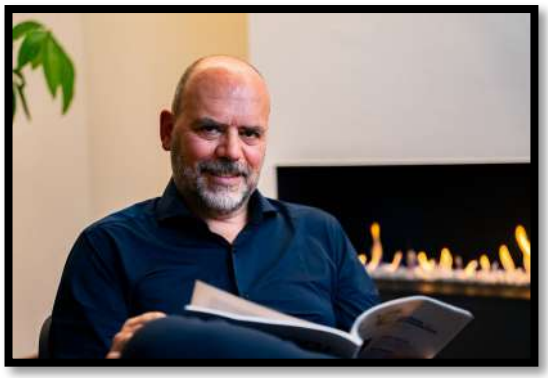
I read Endodontics papers and attend Endodontic Congresses, but mainly, when I have a doubt or a problem, I ask for information or suggestions from my colleagues. In the past, that was difficult, but nowadays, with social media, it's super easy for everyone.

Q. As an author and co-author of several books, you have an intriguing title, *The Isolation Game* . Could you share some insights about this book?

This project dates back almost 18 years. Rubber dam is still not as widespread as it should be, considering that it plays a crucial role in infection control during endodontic treatment, with an impact on the outcome of the treatment. The aim of the book is to explain all the advantages of isolation, describing step by step the basics for its application and offering tips for achieving proper isolation in complex cases.

Q. Having held prestigious positions in the Italian Society of Endodontics, could you share your experience and involvement with the society?

The Italian Society of Endodontics taught me many things about Endodontics, about people, about colleagues, but especially about myself. I have always made myself available to the Society, and my attitude has always been to work not in the Society, but for the Society, giving my contribution. These were beautiful years, full of work and projects, and even though my story in the Society ended with my resignation as President, I will always be grateful to the Society for what it taught me. It taught me that people are very different from each other, and this variety is an invaluable wealth, a resource that I believe we should be happy about. It also taught me that there are people who dedicate themselves to the Society out of a spirit of service, while others are driven by a desire for power that goes beyond their merits and are interested in positions of authority, not recognizing the merits and competencies of others, whom they see not as teammate, but as opponents. But the most important thing it made me understand is that I am not a politician. For me, meritocracy, respect for roles, and independence from lobbies or commercial companies are the foundation for leading the Society in the interest of all members, and not for the benefit of a few.



Q. As a member of the Style Italiano Family, could you share how this platform helps empower dentists?

Styleitaliano started 7-8 years ago. In the beginning, we were just four Italian members, and now the family counts many members from all around the world. Basically, it's a way to keep in touch with many expert endodontists, asking for suggestions for your practice. That's the real power….connecting people. People who post cases in the group can receive positive criticism in order to improve the quality of their treatments. I believe that if you have an open mind, you can benefit from the comments of the followers.

Q. What is a common myth or misconception in endodontics that you believe should be clarified?

There isn't a specific one, but probably the most important thing to understand is that we perform patient-centered outcome procedures. So, every time I see posts where it seems possible to complete an endodontic treatment in 20 minutes and people think they are "Endo-Gurus" because they are superfast, I think we are forgetting the real aim of endodontic treatment, and I'd like to see the outcome in 3-4 years. Deep disinfection requires time, and it's important because the outcome depends essentially on our ability to manage the bacterial problem. Being superfast could mean not working in the best interest of the patient.

Q. We are honored to have a distinguished speaker like you at the upcoming Indian Endodontic Society Congress—IESCON 2025 in Goa. With many endodontists eagerly looking forward to learning from you, could you give us a preview of your upcoming lecture?

The lecture will be very comprehensive. I will approach the topic in a way that will allow the attendees to have a clear understanding of the ledge issue by the end of the lecture. Starting with the etiology and prognosis, there will be a very detailed section on the prevention of ledges and how to manage them if present, offering solutions for proper management based on the position of the ledge in the canal. The presentation will also analyze which type of obturation is recommended, depending on the type of management and the position of the ledge. Many clinical cases and diagrams will support the presentation, which I hope the attendees will find enjoyable.

Q. Beyond dentistry, what inspires or influences your work the most? Do you have any hobbies or passions that shape your perspective?

The approach to the patient depends not only from the formation you got at the University, but even on the education you received from your family, I think the “daughter test” is the best way to approach and fixing problems to the patients. I love to travel and to keep in touch with people of different culture, this is the best way to open your mind and to grow up as human being, but at the same time I love spending time with my family and during summer time I love relaxing on my inflatable boat.

Q. As a key member of Style Italiano, you've collaborated with renowned dental professionals worldwide. How has this global network shaped your perspective on modern dentistry and patient care?

I started traveling for congresses before Styleitaliano, but definitely, Styleitaliano gave me the opportunity to connect with many people, especially during the pandemic era when we did a great job on social media. The pandemic completely changed the rules of educational activities, and it probably accelerated something that had started a few years before. The problem with social media is that both colleagues and patients can come across fake information. We fight against that, always trying to respond to incorrect messages that could affect the quality of treatment. For this reason, we only accept dentists in the group, not patients, and we control the quality of the posts before they are published.

Q. What gaps still exist in endodontic literature today? Are there specific areas where further research is needed?

The main gap is that the bridge between research and practice is still large. Research should focus on providing certainties to the practitioner, but the level of evidence in endodontics is still low. Often, I read a great study, think that the authors did a fantastic job, and that the reading increased my knowledge on the topic, but useful indications that can affect my daily practice are weak or non-existent. Moreover, studies on outcomes are lacking, particularly regarding new techniques and materials.

Q. How do you balance your professional responsibilities with your personal life, and what advice would you give for maintaining this balance?

Family is fundamental. I never saw my family as an obstacle to realizing my projects; my wife, especially, has always been supportive. Staying at home with my family is the best place to be. I travel a lot, but I'm always looking forward to coming back home, it's my safe place.

Friendships are also really important, and thanks to my job, I have made many true friends, not social media friends. The list is long. It's clear that relationships with family and friends need to be nurtured. They change over time, and you must adapt to these changes; only then will they remain your pillar for the future. Focusing only on work is not wise. You need something to reduce stress, and spending time with people you care about is essential. True wealth is not in the money you have, but in the quantity and quality of the human relationships you have.

The approach to the patient depends not only on the education you received at university, but also on the values instilled by your family. I believe the "daughter test" is the best way to approach and solve problems for patients. I love to travel and stay in touch with people from different cultures; this is the best way to open your mind and grow as a human being.

From India to Oz: A Dentist's journey

Dr Sameer Makkar
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From Endo Expert to Aussie All-Rounder: My Dental Migration Story

"Every new beginning comes from some other beginning's end." – Seneca

Moving to a new country is like stepping into uncharted waters—exciting, unpredictable, and sometimes overwhelming. As an endodontist from India with two decades of experience as a Professor and Head of Department, I had built a thriving career. My days were filled with complex root canal cases, academic leadership, and mentoring young dentists. Yet, life had other plans.
The desire for a better work-life balance, international exposure, and new professional challenges led me to Australia. While the move brought fresh opportunities, it also demanded a complete reinvention of my career. I went from being a specialist in India to a general dentist in Australia, adapting to a new healthcare system, different patient expectations, and rigorous licensing requirements.

For those considering a similar journey, this is a real, unfiltered look at the opportunities, challenges, and lessons learned while transitioning from an Indian specialist to an Australian general dental practitioner.

The Decision to Move

"Sometimes the hardest choices lead to the most beautiful destinations."

Dentistry in India is highly competitive, with specialists handling high patient volumes and fast-paced treatments. As an endodontist, my focus was on root canal therapy and restorative procedures. So why leave a stable, well-respected career?

Australia offered something India couldn't—a balanced lifestyle, structured healthcare system, and long-term career growth. Plus, I had already cleared my Australian Dental Council (ADC) equivalency exam almost a decade ago—the only thing left was taking the leap.

Career Pathways for Indian Dentists in Australia

"The path to success is never a straight line—it's a series of twists, turns, and unexpected detours."

Indian dentists migrating to Australia have multiple career options, each with its own set of challenges and rewards.

1. *The Australian Dental Council (ADC) Pathway (Most Common)*

The most direct way to practice as a General Dental Practitioner (GDP) in Australia is through the ADC exams:

- Initial Assessment – Verification of qualifications.
- Written Examination – Testing theoretical knowledge.
- Practical Examination – Hands-on clinical skills assessment.
- AHPRA Registration – Mandatory registration with the Australian Health Practitioner Regulation Agency (AHPRA).
- This process is challenging, expensive, and time-consuming (costing around AUD 20,000–30,000 and taking 2–3 years). However, clearing it opens doors to full-fledged dental practice.

2. *Bridging Programs for Hygienists & Therapists*
Some dentists postpone taking the ADC exams and instead opt for a bridging course to work as: Dental Hygienists – Specializing in preventive treatments or Dental Therapists – Performing limited restorative procedures.
This provides income while allowing dentists to gain local experience before attempting ADC.

3. *Master's in Dentistry (MDS) in Australia*
A few Australian universities offer postgraduate programs that may lead to direct registration without ADC exams. However, these programs are Highly competitive, Expensive and Time-intensive (2–3 years full-time study).

4. *Research and Teaching*
For those passionate about academia and research, positions in universities and research institutions provide an alternative career path without ADC registration.

5. *Working as a Dental Assistant*
Though a step down in status and salary, many Indian dentists work as dental assistants while preparing for their ADC exams. This helps in understanding the Australian dental system, observing clinical protocols and networking with potential employers.

Adapting to General Dentistry in Australia
"It's not the strongest species that survive, but the most adaptable." – Charles Darwin

In India, I thrived as an endodontic specialist. In Australia, I had to reinvent myself as a general dentist. This meant- Learning extractions, prosthodontics, paediatric dentistry and also adapting to Australia's prevention-focused approach. Moreover, understanding private health insurance-driven treatment planning.

One of the biggest shifts was patient mindset. In India, patients often seek quick, affordable fixes, whereas in Australia, they prefer long-term treatment plans and preventive care.

Challenges Faced by Migrating Indian Dentists

"Every challenge is an opportunity to grow."

Migrating to Australia as a dentist is an exciting yet demanding journey, filled with hurdles that test resilience and adaptability. One of the biggest challenges is the steep financial investment—just qualifying through the Australian Dental Council (ADC) exams can set dentists back by ₹10–15 lakhs (AUD 20,000–30,000), and that's before factoring in the country's high cost of living. Financial planning becomes crucial to survive the transition. Even after clearing the exams, breaking into the job market is tough, as employers often favor locally trained professionals. Many international dentists start with lower-paying jobs before securing positions that match their expertise. Then comes the adjustment to Australia's strict clinical standards—flawless infection control, extensive documentation, and mastering digital workflows like CAD/CAM, CBCT, and electronic health records are all non-negotiable. Another major shift is navigating the insurance-driven dental system, which contrasts sharply with India's out-of-pocket model. Understanding compliance and regulations is essential to avoid legal pitfalls. On top of all this, cultural and communication barriers can make patient interactions challenging. Australian patients expect in-depth explanations and a say in their treatment plans, making clear and empathetic communication a key skill. While these challenges are real, they also offer a chance for growth—every obstacle overcome is a step closer to building a successful dental career in Australia.

Strategies for a Smoother Transition

"Success is where preparation and opportunity meet." – Bobby Unser

Success in migrating as a dentist to Australia starts with thorough planning and research. Understanding the ADC process, associated costs, and expected timeline well in advance can help avoid surprises. Joining online communities of Indian dentists already in Australia provides valuable insights and support. Financial preparation is equally crucial—saving at least ₹15–20 lakhs (AUD 30,000–40,000) before starting the ADC journey ensures stability. Exploring part-time work in allied dental roles, such as dental assisting, can help manage expenses.

Investing in ADC coaching significantly boosts the chances of passing on the first attempt. Hands-on training further helps in adapting to Australia's clinical standards, making the transition smoother. Gaining local work experience by working as a dental assistant or hygienist not only provides exposure but also helps build professional connections. Observer ships in private clinics can give a deeper understanding of patient expectations and local practice norms.
Navigating visa and immigration policies wisely can also make a big difference. Consulting migration agents for PR pathways and considering regional work opportunities can improve eligibility for permanent residency. With the right preparation and mindset, the transition to practicing dentistry in Australia can be a rewarding experience.

Looking Ahead: My Future Goals in Australia

"Never stop learning, because life never stops teaching."

Looking ahead, my ultimate goal in Australia is to return to my passion—Endodontics. While I began my journey here as a General Dentist, I am committed to pursuing further training and certifications to refine my expertise. Beyond clinical practice, I also aspire to explore teaching and research opportunities, contributing to both the academic and professional growth of Endodontics in Australia. My vision extends to delivering specialist endodontic care, ensuring high-quality treatment for patients while staying at the forefront of advancements in the field.
For those considering this path, my advice is simple: stay patient, embrace change, and invest in continuous learning. The journey may be challenging, but with persistence and adaptability, success is within reach.

"Life begins at the end of your comfort zone."

Migrating from India to Australia has been a challenging yet fulfilling journey. I left behind a specialized career, but I gained new skills, fresh perspectives, and a better quality of life. For Indian dentists considering this path: be prepared, be adaptable, and stay persistent. The road is long, but at the end of it lies a future full of possibilities.

Up to the minute

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Is "MAOism" (Mechanical Acoustic Optical irrigation systems) successful in Endodontics?

- **A Critical appraisal of available evidence on irrigant activation systems**

Introduction

Cleaning and shaping are essential to prepare the root canals by removing pulp, microbial contents, debris and smear layer to enable three dimensional obturation. The simple introduction of oxygen into an anaerobic space makes this mechanical procedure antimicrobial. It has been found that manual instrumentation coupled with just saline irrigation itself reduces bacterial counts by more than two-fold (10^4-10^6 to 10^2-10^3 cells -53%). If rotary instrumentation is used, then microbial reduction reaches 98%. But mechanical instrumentation can produce a residual smear layer that adheres to the dentinal tubules and prevent sealers from entering them.

On the contrary, the canal morphology too poses challenges to the clinicians with its complexities leading to many unprepared areas harbouring pathogens. Even in favorably shaped canals, micro-CT analysis has shown that approximately 30% of the total surface area is barely touched by instrumentation. This exponentially increases with apical movement and unfavourable canal shapes to even 80%. The microbes that subsist such preparations, in the uninstrumented intracanal complexities are the main causatives for persistent infection as they recolonize a obturated root canal eliciting secondary apical periodontitis or failed endodontic treatments. Hence, irrigation plays a key role with the objectives of physical flow for canal wall interaction leading to debridement and chemical interactions to disrupt biofilm, detoxification of endotoxins, dissolution of pulp and removal of smear layer.

Need for irrigant activation

Conventional Needle irrigation (CNi)

This relies on the irrigant's viscosity and positive pressure of delivery. The recommended needle gauge is 27 for greater penetration depth though many authors have reported up to # 30. Open ended, side vented or notched needles are recommended. It has been found that open ended had maximum penetration depth up to working length (WL) whereas side-vented could prevent extrusion better. CNi controls depth and volume but not flow rate. Canal morphology, placement depth, position of the needle's vents greatly decides the flow up to working length and interaction with root canal walls. Other limitations of CNi's are incomplete debris removal, vapor lock, inaccessible to apical root canals and other complexities like fins and isthmuses as it is confined to needle's level of penetration. Vapor lock is air entrapment due to decomposition of sodium hypochlorite (NaOCl) into CO_2 and ammonia bubbles in the apical part of root canal preventing irrigant from reaching. It was found that it is the highest for CNi at 70% while for other systems it is lower. This results in significant detection of bacterial lipopolysaccharides and lipoteichoic acid. This only leaves us to a wild imagination if they indeed reach periapex and modulate an immune response to perpetuate secondary inflammatory process. Besides, the incompletely removed smear layer which is composed of organic and inorganic host tissue debris, harnesses the biofilm while interfering with adaptation and sealing of endodontic materials. This brings us back to fighting root canal reinfection.

Hence, alternative and adjunct techniques like irrigant activation techniques (IATs) have been developed to remove smear layer and enhance the sealing ability up to the depths of dentinal tubules during subsequent obturation. These are categorized as mechanical, chemical and thermal techniques for improved cleaning. It could be done during regular irrigation or as a final irrigation protocol. This is because the irrigation is as reliant on the irrigant's properties as it is on the mode of distribution. The adherent hard tissue debris (AHTD) is best removed only by a strong physical and a complementary chemical phenomenon. Computational fluid dynamics has demonstrated that shear stresses and hydrodynamic pressures were more localized for CNi than IATs. In whatever way it may be used, activation helps to disperse and move the irrigant around the canal spaces augmenting chemical cleaning and sometimes inadvertently erosion.

Mechanical Acoustic Optical irrigant activation systems

The irrigant activated by any one form of energy like Mechanical, Acoustic or Optical (MAO) is agitated enough to achieve enhanced flow to the intricacies of the root canal spaces and has revolutionized modern Endodontics to usher in a paradigm shift. The most commonly used activation techniques are manual dynamic agitation (MDA), Ultrasonically activated irrigation (UAi) passive ultrasonic irrigation (PUI), sonic irrigation (Si) and laser activated irrigation (LAi) including photon induced photoacoustic streaming (PIPS) and shock wave enhanced emission photoacoustic streaming (SWEEPS). The intracanal cleanliness achieved warrant their routine usage in practice. The outcome is far superior to CNi. A recent systematic review and meta-analysis of 12 studies by Virdee et al. showed that whatever be the type, activated irrigation has better removal of smear layer and debris. But in the apical 1mm it was not significant.

"M" of "MAO" – Mechanical

MDA

MDA, reciprocating activation, Self adjusting file (SAF), XP Endo Finisher, XP Endo Shaper, TRUShape, RinsEndo and apical negative pressure (ANP) constitute the mechanical methods of irrigant activation. MDA is a low-cost technique that does not depend on any additional gadget. It involves using a well-fitting gutta-percha cone or file or brush in an instrumented canal and giving 2-3mm longitudinal push-pull strokes.

Up to 100 strokes at the rate of 30-60s for 1-2 min can be given. This produces hydrodynamic pressure that displaces irrigant. It is efficient in removing apical vapour lock and enhancing the irrigant's antimicrobial action. In a systematic review MDA was found to be the most effective and statistically significant activation method for apical debris removal, better than even ANP. In smear layer removal, it was equivalent to ANP. Irrigant penetration depth was significantly better than CNi. The limitations of this technique are, it is highly subjective, causes irrigant extrusion and post-operative pain. It was recommended 3 times by authors.

EasyClean

It uses an acrylonitrile butadiene styrene (ABS) polymer instrument of #25/04 connected to electric motor. It has an aircraft wing cross section. In reciprocating motion it cleared microbes more effectively. It is better in rotary motion for irrigant penetration depth and debridement.

SAF

It uses a special RDT handpiece and a special VATEA pump or EndoStation all in one unit to deliver the irrigant. The file is hollow lattice-walled cylinder. The design enables shaping the canal with larger dimensions conforming to its original shape. No pressure is generated. The vertical vibrations (0.4mm) produced by the RDT handpiece with dual mechanical function, help debridement and disinfection by a scrubbing action. While not binding, the clutch mechanism of the handpiece allows rotation. At 5000rpm, 5000 vibrations/min are generated. It produces better cleaning and root canal filling adaptation. VATEA is a separate peristaltic pump operated by a foot switch and delivers irrigant at 4mL/min to SAF through a polyethylene tube whereas, the Endostation has both micromotor and peristaltic pump operated by a single foot pedal.

XP Endo Finisher

It is a non-tapered nickel-titanium (NiTi) thermomechanically treated MaxWire instrument of #25. The austenite transformation from martensite at approximately 35 ^{0}C gives a spoon shape configuration with 1.5mm depth and 10mm length and produces eccentric movement. The speed is 800rpm and up-down movements are given at 1Ncm torque after canal preparation to a #25 file. It efficiently removes, smear layer, debris, medicaments, biofilms and filling materials.

RinsEndo – Hydrodynamic pressure (Positive pressure)

It involves simultaneous irrigation and aspiration using hydrodynamic pressure. The system is connected to the turbine cable and irrigant is pumped through cannulas (30gauge; 7mm lateral opening) at 2-5 bar pressure, 6.2mL/min flow rate and frequency of 1.6Hz into canals. It is significantly better than CNi in penetration depth and antimicrobial action. It efficiently removed apical debris. The common adverse effect was apical extrusion.

ANP

It is an alternative method of irrigant delivery that prevents extrusion. The irrigant is delivered in the pulp chamber by a syringe and needle (master delivery tip). It uses a macrocannula (0.55mm dia; 02 taper) and a microcannula (0.32 dia; 12 holes). The former is inserted 2-9mm from WL, while the latter at 1mm from WL. The negative pressure of the microcannula pulls the irrigant to apex till WL. Gradual coronal movements with activation every 6s of approximately 3.75min. Preparation of the canal to atleast #35 is essential to use it. In a systematic review, it was found to be the most effective debris removal agent coronally. While smear layer removal at 1mm from apex was the best. It prevents vapor lock. The best irrigant penetration depth in both straight and curved canals is achieved with this system. It was one of the most recommended activation systems with 10 recommendations.

"A" of "MAO" Acoustic

UAi

Ultrasonics is the most commonly used activation technique. It uses a frequency of 25-30 kHz. It demonstrated better push out bond strength than sonic irrigation (Si) probably due to increased cohesion and sealer adaptation, reduced apical leakage and root fracture. A recent systematic review concluded that UAi is superior in AHTD and pulp removal but not different from CNi in antimicrobial action or periapical healing. Nonetheless UAi is fundamentally antibacterial and produces enhanced canal and isthmus cleanliness. It has been reported to reduce immediate post-operative pain in non-vital teeth with symptomatic apical periodontitis significantly better than Si. It is significantly more useful in removing medicaments like calcium hydroxide ($CaOH_2$) than ANP. The high frequency used could disrupt the tip and block the canal. Further there could be zipping, perforation and deviation especially in curved canals.

PUI

A type of ultrasonic activation, this is generally recommended as a final irrigation. It is termed as non-cutting irrigation as it uses a smooth wire. The acoustic waves induce cavitation bubbles which upon collapse, release energy to dismantle debris from canal walls. The microstreaming will carry the debris out. This occurs as nodes of strong current on the instrument. But, for effective oscillation and above phenomena, the tip must oscillate in a canal three times its size. It shows enhanced irrigant penetration up to WL in both straight and curved canals due to its higher intensity. This technique also shows better AHTD removal than CNi. In a recent systematic review, it was found to be superior to CNi in debris removal from middle third only. Debris, bacterial and smear layer removal was efficient according to a systematic review by Asnaashari et al. Dentin erosion is the common adverse effect of PUI due to the metallic tip used.

Stepwise Intraoperative Activation (SIA)

This utilizes ultrasonic activation of fresh irrigant after every file removal from canal.

Intermittent Ultrasonic Irrigation (IUI)

The irrigant is delivered into the apex with a syringe and needle intermittently during instrumentation and activated by a file/tip closer to WL. It has been shown to have synergism with chemomechanical preparation and NaOCl as the heat of ultrasonic enhanced the action of the latter and removed more bacteria and smear. However, it did not improve healing rate.

CUI

Irrigant is continuously delivered to the pulp chamber/coronal third of root canal and an insert would simultaneously activate it using ultrasonic energy. Thus, it produces greater fluid velocity and shear stresses on walls to clear debris and smear layer. While most ultrasonic activation techniques effectively remove vapor lock, CUI has been found to be superior to PUI and Si.

Continuous apical negative pressure ultrasonic irrigation (CANUI)

It combines the advantages of apical negative pressure and ultrasonic activation. Better penetration into the apical ramifications without fear of extrusion is thus achieved. A tube (0.3mm) inside another (0.75mm) facilitates continuous replenishment and apical drawing of irrigant. There is a NiTi microcannula and the ultrasonic power is set at 6, 25kHz frequency. A 10 mL syringe is attached to the tube whereas, the microcannula is connected to suction. It is inserted into the coronal and middle 3rd of canal during instrumentation which is recommended to be at least #30/06. After instrumentation, it is inserted such that the microcannula is just 0.5mm from WL. The device is activated only after placement. It is very efficient in cleaning curved canals. iVac is another equipment of the same principle. It uses a flexible polymer microcannula. The outer tube can be 0.35/0.5mm. It is coupled to a piezoelectric handpiece. Hence there is simultaneous vibration and irrigation. The other end of the cannula is connected to standard evacuation unit. Bacterial reduction has been found to be superior.

Si

Sonic activation operates on low frequency (1-6kHz) vibration. It uses 10000 cycles/min, for 1-6 min activation. It's tip is made of either flexible polyamide which doesn't touch canal walls while oscillating and hence produces less smear or metal or conventional needle. The sizes range from 15/02 – 35/04 and is used till 2mm from WL. Since the frequency is lower it produces less fluid velocity and shear stresses on canal walls. But it's horizontal component or amplitude is more. So, these devices have one node at the attachment and one antinode at the free end of the tip. When its lateral movement is restricted by canal walls it produces longitudinal movement which is helpful in debridement. It produces effective acoustic transmission. No significant difference has been reported in antimicrobial potential between Si and CNi. However, it enhances sealer penetration in coronal and middle thirds of the canal better than CNi. It is less effective than UAi. One meta-analysis found it to remove smear layer in apical 3rd better than UAi, whereas, another found it to better remove smear from coronal and middle 3rds. It was recommended 6 times by authors.

GentleWave

It uses multisonic technology that produces multiple acoustic frequencies at the same time. It is developed to disinfect minimally instrumented canals. It is found to be 8 times superior to UAi and 10

times superior to CNi in quicker dissolution of tissue. It is efficient in removing medicament, fillings, calcifications and separated instruments in middle and apical 3rd without dentin removal. The handpiece is single use type. Like PIPS and SWEEPS, its tip is kept in the pulp chamber only without entering the canal. The steady flow (45mL/min) of NaOCl is prevented from contacting oral cavity by sealing the tooth crown and the debris laden fluid from canal is sucked by pores in the handpiece. It produces cavitation and micro bubble implosion. The vortical fluid flow by itself generates a negative pressure inside the canal. However, it is significantly less effective in curved canals unlike PUI. It produces significantly greater vapor lock than UAi.

"O" of "MAO" Optical

LAi

Pulsed laser light acts on irrigant to improve its distribution, dynamics and cleaning potential. It is unlike photo activated disinfection (PAD) as it uses >0.5W power. It can remove even obstinate microbes like *Candida albicans* and *Enterococcus faecalis*. Laser light is straight and hence may not completely disinfect all root canal surfaces. Like other methods, power, wavelength duration and type might affect the outcome. This also produces cavitation and implosion of bubbles which will clear the debris. A long conical tip kept 2-5mm from WL is activated with vertical movements. Diode (445-980), Erbium yttrium aluminium garnet (Er:YAG-2940), Neodymium yttrium aluminium garnet (Nd:YAG-1064), Erbium chromium yttrium scandium gallium garnet (Er, Cr:YSGG-2780), potassium titanyl phosphate (KTP-532), thulium fiber laser (TFL) are the various lasers used. Diode is the most commonly used laser for activation and has synergistic property with NaOCl in antimicrobial action and healing and hence better than CNi. Er:YAG is superior to other lasers and activation methods like PUI in antimicrobial, debris & medicament removal and sealer penetration. This is because of it's wavelength matching with the absorption spectrum of water, as most irrigants are aqueous. Besides it's own antimicrobial potential, it dissociates water into OH^- ions to potentiate this action. Other near infrared (810/940/980nm) including diode and Nd:YAG, are hand-held economical lasers that produce cavitation bubbles in irrigants to enhance disinfection. In a systematic review LAi was better than UAi in antimicrobial, smear layer and debris removal. LAi also reduces post-operative pain (POP) considerably better than CNi.

PIPS

It produces a single laser pulse in square waveform. It uses photochemical energy of low power at 20mJ, 0.3W power, super-short pulses of 50µs duration, to produce photoacoustic streaming so fast as to create vapor bubble at the tip itself, for smear and debris removal from canals even when the tips (600µ) are kept at canal orifices. It does not require wider canal preparation and will not produce thermal effects.

SWEEPS

If PIPS is carefully controlled to emit timed consecutive pulses, the result is synchronized pairs of short pulses. Then cavitation bubbles can collapse faster increasing its efficacy. This is termed as SWEEPS. Both these techniques are significantly better than other LAi and activation systems, especially as they reduce debris extrusion. The cleanliness achieved is also superior to Si.

Conclusions

In a systematic review and meta-analysis, IATs had better penetration depth up to the WL in straight and curved canals when compared to CNi. The difference in penetration depth between IATs and CNi in straight and curved canals was found to be 52%, and 34% respectively. The literature is scarce on the consensus for the best irrigation protocol for effective activation to remove smear layer and debris. In vitro scanning electron microscopic evaluations have their limitations owing to the process of mounting, sectioning and gold sputter coating which can affect remaining debris (35-700x) and smear layer (300–3 000x) measurement. Also smear production itself will rely on instruments contacting canal walls and its absence in imaging could be erroneous if only areas of interest are captured adding to bias. On the contrary, occluded tubules could be due to physiological or pathological sclerosis which are erroneously captured as smear plugged tubules especially in the apical 3rd where tubule density is lower. The magnification factor of the SEM, scoring systems further confounds the findings.

However, in vitro studies using closed canal systems reported worse cleanliness than open ones owing to the better flushing out of debris in the latter. Furthermore, standardization of the activation techniques is also unavailable. Many factors like insertion depth, power intensity, root canal taper, activation time and the type of tip may also significantly influence the removal of debris and smear layer. Overall evidence points to better irrigant distribution when NaOCl is used with passive ultrasonic irrigant activation or XP endo finisher. However, many unresolved concerns still remain. A better representative research model is the need of the hour such that clinical superiority of the techniques can be precisely elucidated. Hence, the experts' consensus on clinical practice guidelines indicates that irrigant activation and other adjunct therapies as "not suggested".

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Navigating the Future of Endodontics: A Closer Look at the Management of Vertical Root Fractures

In recent years, the landscape of endodontics has been undergoing a profound transformation, driven by advancements in technology and biomaterials. One of the most challenging conditions in clinical practice is Vertical Root Fracture (VRF)—a diagnosis that traditionally meant one thing: extraction. However, with new materials, innovative treatment approaches, and digital diagnostics, the tide is shifting toward tooth preservation, offering clinicians a fresh perspective on managing these cases.

VRFs have long been a source of frustration for both dentists and patients. These fractures, which typically occur in endodontically treated teeth, often present with nonspecific symptoms —mimicking periodontal lesions or failing root canals. Historically, the primary approach to managing the affected tooth involved extraction, hemisection, or root resection, followed by prosthetic or implant-based rehabilitation. But today, advanced bioceramic materials, intentional replantation techniques, and AI-driven diagnostics are revolutionizing the way we manage these cases, paving the way for a more conservative, patient-centric approach.

Revolutionizing Diagnosis: The Role of CBCT and AI in VRF Detection

Accurate diagnosis is the foundation of effective VRF management. While periapical radiographs remain a staple, they often fall short in detecting fractures, especially in the early stages. This is where Cone Beam Computed Tomography (CBCT) has emerged as a game-changer. CBCT provides a three-dimensional view of the fracture line, allowing clinicians to evaluate the extent of damage and associated bone loss with greater accuracy [1]. Beyond imaging, artificial intelligence (AI) and deep learning models are now being integrated into VRF diagnostics. Recent studies have demonstrated that AI-powered algorithms can predict root fractures with up to 80% accuracy, identifying subtle risk factors before clinical symptoms manifest [2]. AI-driven image enhancement is also proving beneficial, increasing detection rates on periapical radiographs by reducing noise and highlighting fracture lines [3].

Key Takeaway:

AI and CBCT are no longer futuristic tools—they are transforming how we diagnose and predict VRFs, enabling earlier intervention and better outcomes.

Beyond Extraction: Cutting-Edge Management Strategies for VRFs

With advancements in biomaterials and surgical techniques, clinicians now have multiple tooth-saving options that were once considered impractical.

1. Adhesive Bioceramic Repair: Strengthening the Fractured Root

The introduction of bioceramic-based repair materials such as Biodentine, iRoot BP Plus, and MTA has redefined how we approach VRFs. These bioactive materials offer:

- Superior sealing ability to prevent bacterial infiltration.
- High biocompatibility, promoting dentin regeneration.
- Minimal shrinkage and enhanced mechanical strength.

Clinical reports have demonstrated successful VRF management using a combination of Biodentine, a bonding agent, a fiber post, and dual-cure resin cement, followed by a ceramic crown [4]. This approach reinforces the tooth structure while maintaining function and aesthetics.

2. Intentional Replantation: A Second Chance for the Tooth

In cases where fracture repair is not feasible intraorally, intentional replantation offers an alternative to extraction. The technique involves:

- Atraumatic extraction of the fractured tooth.
- Extraoral repair of the fracture line using Biodentine or calcium silicate-based cement.
- Replantation with minimal trauma to preserve periodontal ligament viability.

Studies have shown long-term success, with follow-ups indicating bone regeneration, attachment gain, and no signs of ankylosis [5]. This technique is particularly useful for single-rooted anterior teeth, where esthetic and functional preservation is crucial.

3. Titanium Screw Fixation: A Novel Approach to Root Reinforcement

For cases with separated fracture segments, an innovative technique involves reattaching the fragments using a titanium screw. This method stabilizes the fractured root while maintaining periodontal ligament integrity.

A case study reported successful management of a vertically fractured mandibular premolar using this technique, with a 7-year follow-up showing excellent function and bone regeneration [6]. While not widely adopted, this approach presents an intriguing alternative for preserving teeth with extensive fractures.

4. MTA-Filled Adhesion: Leveraging Microscope-Guided Endodontics

Using operating microscopes (OMs) and ultrasonic instruments, clinicians can now minimize invasive preparation while treating VRFs. A new method involves:

- Removing infected dentin under magnification to ensure precision.
- Using MTA as an adhesive filler to stabilize the fracture site.
- Utilizing apex locators to prevent perforation during crack enlargement.

In a study involving 52 VRF cases, a 94.3% survival rate was reported using this approach, with follow-ups extending up to 90 months [7]. This highlights the potential of microscope-assisted techniques in VRF management.

The Future of VRF Management: Where Do We Go from Here?

While these techniques are transforming the way we approach VRFs, the key to long-term success lies in prevention and risk assessment.

Rethinking Post-Endodontic Restorations

- Avoid unnecessary post placement, which weakens the root.
- Use fiber-reinforced posts instead of rigid metal posts to distribute occlusal forces more evenly.

Optimizing Occlusion to Reduce Stress on Roots

- Identify parafunctional habits and prescribe night guards when needed.
- Ensure proper occlusal load distribution to prevent microcracks from progressing into full fractures.

AI-Powered Fracture Prediction Models

- The integration of deep learning models into routine clinical practice can help assess fracture risk before it occurs [2].
- AI-based automated VRF detection in radiographs could soon become a standard diagnostic tool [3].

Take-Home Message: Redefining the Narrative Around VRFs

The days when a vertical root fracture meant automatic extraction are rapidly fading. With the advent of bioceramic repair materials, intentional replantation, AI assisted diagnostics, and microscope-guided techniques, the focus is shifting toward tooth preservation rather than replacement.

- VRFs are no longer an end—they are a challenge to overcome.
- Adhesive biomaterials, advanced imaging, and AI are revolutionizing diagnosis and treatment.
- The future of endodontics is centered on predictability, precision, and patient-centric solutions.

As these techniques become more refined and research continues to validate their effectiveness, tooth-saving solutions for VRFs will likely become the new standard in endodontic care. The question is no longer, ***"Should we extract?" but rather, "How can we preserve?"***
And that, ultimately, is the **"TRUE FUTURE OF ENDODONTICS**".

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Beyond the Clinic

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Emerging Opportunities for Restorative Dentists and Endodontists

The dental profession is evolving rapidly. Once considered a purely clinical field, dentistry—particularly specialties like Restorative Dentistry and Endodontics—has expanded into dynamic intersections with industry, technology, innovation, and entrepreneurship. Today's dental students, equipped with foundational knowledge of biomaterials, tooth morphology, tissue interactions, and evidence-based procedures, are uniquely positioned to explore a broad spectrum of career pathways. From product development and regulatory affairs to translational research and entrepreneurial ventures, the future is full of possibilities.

This article explores these diverse opportunities in depth, emphasizing how dental students can leverage their expertise in Restorative Dentistry and Endodontics to shape the future of oral healthcare both within and beyond the operatory.

1. Product Development and Innovation

Dental students are natural innovators. Their daily experience with clinical procedures, tools, and materials gives them a frontline perspective on what works and what doesn't. This makes them ideal candidates for **product development roles** in dental materials companies.

In Restorative Dentistry and Endodontics, innovations in adhesives, composites, bioactive materials, regenerative scaffolds, and obturation systems are in constant demand. Dental students can contribute by:

- Identifying clinical gaps.
- Designing and testing prototypes.
- Collaborating with materials scientists and engineers.
- Validating products in simulated or real clinical conditions.

Product development roles are particularly fulfilling for those who enjoy hands-on experimentation and working in cross-disciplinary teams.

2. Product Management and Clinical Strategy

Closely linked to development is **product management**—a strategic role that blends technical knowledge with marketing and business acumen. Clinical product managers guide a product from concept to launch, coordinating with R&D, marketing, sales, and regulatory departments. For dental graduates, their clinical insights are invaluable in:

- Setting product specifications.
- Designing usability trials.
- Preparing training material for dentists.
- Conducting competitive landscape analysis.

Many multinational and domestic dental companies actively recruit dentists for these roles, recognizing that someone with both clinical experience and product understanding can effectively bridge the gap between development and deployment.

3. Translational Research: Bridging Bench to Chairside

Translational research—the process of converting scientific discoveries into practical solutions—is a powerful avenue for dental students with a research mindset. This involves:

- Taking innovations from the lab (such as novel biomaterials, drug delivery systems, or nanotechnology-based products) and adapting them for dental use.

- Conducting preclinical and clinical trials.
- Collaborating with engineers, chemists, and pharmacologists.
- Working with technology transfer offices to file patents and commercialize innovations.

Many dental institutions are now establishing translational research centers, incubators, and innovation cells to support student-led research and development projects.

4. Regulatory Affairs and Clinical Evaluation

Every dental product must meet stringent safety, efficacy, and performance standards before it reaches the market. **Regulatory affairs** is a niche yet growing area where dental students can thrive. Understanding biocompatibility, ISO standards (like ISO 10993 or ISO 7405), clinical evaluation protocols, and documentation is crucial.

In India, the **Central Drugs Standard Control Organization (CDSCO)** governs dental product approvals, while international markets look to **FDA (USA)** and **CE (Europe)** certifications. Dental professionals are increasingly being hired in:

- Regulatory documentation teams.
- Clinical trial management.
- Biocompatibility and risk assessment divisions.
- Quality systems and compliance audits.

Given the increasing complexity of regulations surrounding medical devices, the demand for trained professionals with both clinical and regulatory knowledge is on the rise.

5. Research Funding, Fellowships, and Career Opportunities in Government Bodies (ICMR, DST, DBT, BIRAC, SERB)

- For dental students inclined towards academia, research, and innovation, India's government-funded science agencies provide both research funding and employment opportunities.
- Indian Council of Medical Research (ICMR): ICMR supports projects related to public oral health, antimicrobial resistance, caries prevention, and oral cancer. Apart from offering fellowships like JRF and SRF, it hires scientists and project officers for clinical research units, epidemiological surveys, and translational programs. Dental graduates with a Master's or PhD are eligible for Scientist B and C positions.
- Department of Science & Technology (DST): DST supports interdisciplinary innovation through schemes like NIDHI-PRAYAS, INSPIRE, and TIDE. Dental professionals can join funded start-ups or work as innovation managers, research associates, and technology fellows within DST-supported incubation centers.

- Department of Biotechnology (DBT) and BIRAC (Biotechnology Industry Research Assistance Council): These bodies fund start-ups and translational projects that use biomaterials, regenerative dentistry, diagnostics, or 3D printing. BIRAC offers entrepreneurship fellowships like SPARSH and BIG, and employs program managers and evaluators with dental or biomedical backgrounds.
- Science and Engineering Research Board (SERB): SERB provides Start-up Research Grants, EMR projects, and core funding schemes. SERB also offers opportunities for dental professionals as reviewers, research fellows, or coordinators in interdisciplinary health-tech projects.
- These bodies are not just sources of grants—they are actively recruiting skilled professionals to manage, review, and execute research portfolios. Dentists with an understanding of biomaterials, clinical protocols, and translational workflows can secure government roles that blend science, policy, and innovation management.

6. Industry Collaborations and Internships

Increasingly, dental schools are signing **MoUs with industry partners** for collaborative R&D. Through internships and elective postings in dental companies, students can:

- Learn about product lifecycle management.
- Participate in customer support and market feedback analysis.
- Join technical documentation teams.
- Assist in training workshops for new product launches.

These experiences often lead to full-time placements and help students build professional networks early in their careers.

7. Clinical Product Managers

As dentistry becomes more digitized and data-driven, **clinical product managers** are emerging as key roles. They oversee:

- Beta testing of new tools (e.g., digital scanners, CAD/CAM systems).
- Data collection for clinical evidence.
- Dentist education and onboarding.
- Organizing hands-on courses and webinars.

These roles blend communication skills, clinical know-how, and a deep understanding of user experience, making them ideal for tech-savvy dental professionals.

8. Market Research and Competitive Analysis

Understanding the market is critical for any product's success. Dental students with a knack for analysis can explore:

- **Market surveys**: Collecting data from dentists, clinics, and distributors.
- **Competitive benchmarking**: Comparing similar products on price, features, and clinical feedback.
- **Pricing strategy and positioning**.
- **Gap analysis** to identify unmet clinical needs.

These inputs help companies refine their offerings and reduce the risk of product failure. Dental professionals provide unmatched insight into what practitioners truly need.

9. Project Management in Dental Technology

Large-scale R&D programs and regulatory submissions require meticulous planning, documentation, and resource allocation. Dental students can become **project managers** or coordinators who:

- Prepare Gantt charts and timelines.
- Track regulatory submissions and feedback cycles.
- Coordinate between clinical investigators and manufacturers.
- Ensure deliverables meet scientific and business goals.

Project management certifications (like PMP or PRINCE2) combined with dental expertise can open up senior management roles over time.

10. Entrepreneurial Ventures and Start-ups

Dentistry is ripe for **entrepreneurship**. Whether it's a novel material, a mobile diagnostic tool, a dental AI solution, or a patient education platform, student-led innovations are receiving increasing attention from investors and incubators.

Several dental entrepreneurs have launched:

- Composite material brands.
- 3D printing resin companies.
- Digital treatment planning platforms.
- Subscription-based preventive care kits.

Incubators like BIRAC, Atal Incubation Centres (AIC), and university-affiliated innovation hubs provide seed funding, mentorship, IP support, and market access. With a sound idea and strong execution, dental students can become founders of the next big oral care brand.

11. Academic Industry Interface

There's growing encouragement for students to pursue **dual roles** in academia and industry. Dental faculty members can now:

- Collaborate with companies on product testing and protocol validation.
- Serve on scientific advisory boards.
- License university innovations for commercialization.
- Guide start-ups in clinical evaluation.

This synergy enhances research outcomes, boosts institutional rankings, and offers students exposure to real-world problem solving.

12. International Exposure and Fellowships

Several global opportunities exist for dental students who wish to explore these interdisciplinary roles:

- **Fogarty Global Health Fellowships** (USA)
- **Marie Curie Fellowships** (EU)
- **Newton-Bhabha Program** (UK)
- **Fulbright-Nehru Doctoral Research Fellowship**

These programs often support research on dental materials, community interventions, and health-tech innovations, offering global visibility and access to cutting-edge facilities.

13. Digital Tools and Certifications

To excel in these emerging roles, students should consider gaining skills in:

- **Data analysis** (Excel, SPSS, Power BI).
- **Design thinking** and prototyping.
- **Documentation tools** like LaTeX or Mendeley.
- **Certifications**: Regulatory affairs (RAPS), project management (PMP), research methodology (ICMR), entrepreneurship (Start-up India).

Platforms like Swayam, Udemy, Coursera, Future Learn, and edX offer relevant courses tailored to healthcare and biosciences.

14. Role Models and Mentorship

Choosing the Right Mentor

In any professional journey—especially in emerging interdisciplinary fields—mentorship plays a pivotal role. A good mentor not only shares knowledge but also provides direction, feedback, and critical networking opportunities. Dental students should seek mentors whose values align with their aspirations—whether in clinical excellence, research, product innovation, or leadership. It's helpful to choose mentors with diverse experiences across industry, academia, and policy, as they can offer holistic guidance. In today's rapidly changing landscape, a mentor who is active in translational research, regulatory affairs, or industry collaborations can open doors to non-traditional but equally impactful career paths.

Conclusion

The field of Restorative Dentistry and Endodontics is no longer confined to cavity preps and root canals. The intersection of science, technology, industry, and policy has created an expanded ecosystem where dental students can thrive in diverse roles—innovators, strategists, researchers, regulators, and entrepreneurs.

To make the most of these opportunities, students must adopt a growth mindset, build interdisciplinary skills, seek mentorship, and stay updated with emerging trends. The future of dentistry will be shaped not just by skilled clinicians, but by visionary leaders who think beyond the dental chair.

Rooted in Art

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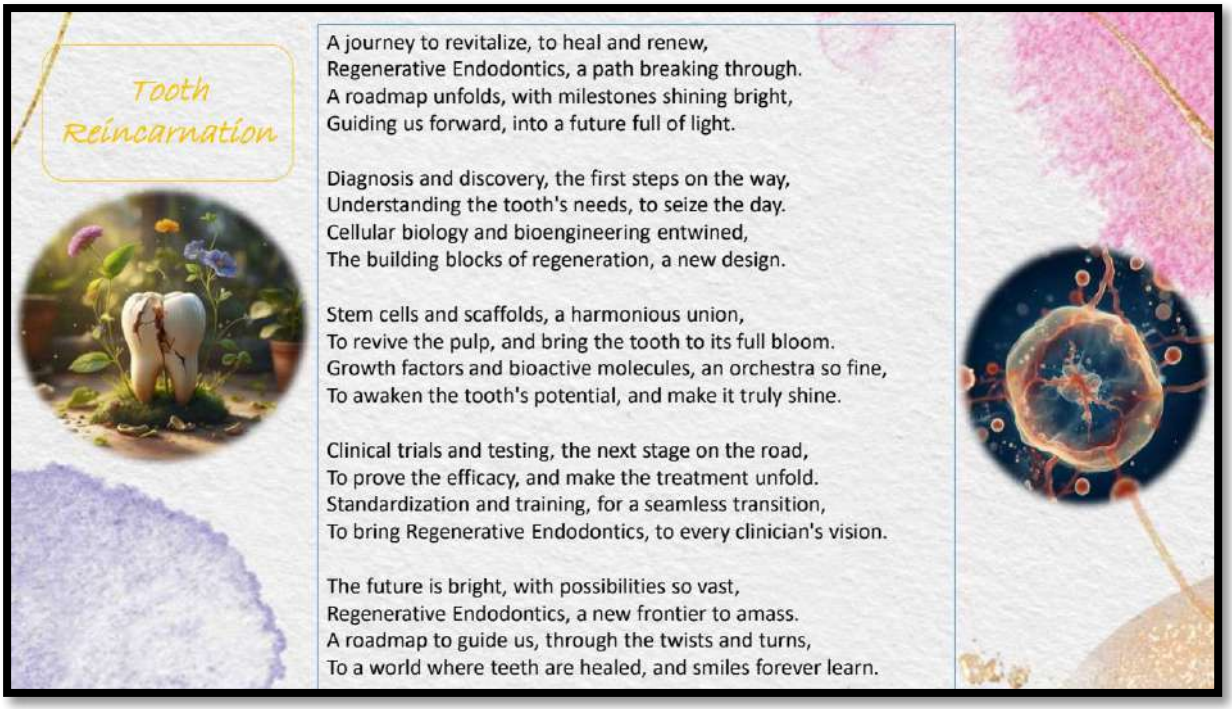

Saving Smiles, Crafting Grace

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In the quiet hum, beneath the enamel lies a story untold,
Of roots winding deep, both fragile and bold.
With gentle hands, I find my way,
Exploring the paths where shadows stay

Each canal a puzzle, a secret to unfold,
In the silence of tooth, a tale is retold.
With steady tools, I clear the dark,
Restoring what's lost, reigniting the spark.

I battle the pain, the silent cry,
Bacteria's shadow, I bid goodbye.
Preserving life, the tooth I defend,
A warrior of healing, until the end

Every smile is a quiet reward,
A fleeting moment I deeply guard.
In this work, I see the proof,
Of art and healing within a tooth.

Endodontics more than a skill, more than a brush,
With steady hands, I heal with hush.
Art, now mingled with my skill,
A harmony of heart and will.

I found a way to love and learn,
To carve, to paint, to twist and turn.
For in these roots, I've found my place,
A healer, an artist, saving grace.

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AN HOUR WITH YOURSELF

Sitting Infront of my colourful wall,
Friends and family none to call.
The quietest hour of the day,
Lots to think but nothing to say.
You become a teacher and student,
Analysing life's rise and dents!
The inner child chases tranquillity
While you are holding on to anxiety.
Mind opens multiple getaways
So that overthinking gets away!
When we chase worldly desire
We fail to transpire,
Soul needs self-content at its best
to quench its thirst!
This quiet hour opens up your eyes
Makes you realise,
Your purpose isn't missing but in disguise!
See through a child's eyes
The world is filled with surprises
Only to make you rise and wise!

Dr. Divya C

Post graduate's ingenuity

Dr. Monika Kumari
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Post-Endodontic Rehabilitation Using Horizontal Fiber Posts

Endodontically treated teeth are prone to structural weakening due to the extensive loss of coronal structure. Traditional post-endodontic rehabilitation often involves vertical post systems, which require invasive canal preparation and increase the risk of root fractures (1). In contrast, horizontal fiber posts provide a biomimetic, minimally invasive alternative by reinforcing the remaining tooth structure and improving fracture resistance (2).

Research suggests that the loss of even a single marginal ridge reduces tooth rigidity by 46%, while the loss of both ridges results in a 63% reduction (3). This highlights the importance of effective reinforcement strategies to maintain the biomechanical integrity of endodontically treated teeth. Studies have demonstrated that horizontal fiber posts enhance stress distribution and structural stability, making them a reliable option for post-endodontic restoration (4).

One significant advantage of horizontal fiber posts is their ability to reinforce structurally compromised teeth without requiring extensive tooth preparation. Unlike traditional crowns or onlays, which often necessitate laboratory fabrication, fiber posts eliminate the need for additional procedures, making them cost-effective and time-efficient (5). Their use in endodontically treated molars has been found to improve fracture resistance, outperforming indirect restorations such as inlays and direct composite restorations alone (6).

Research by Sharma et al. (2023) highlighted the superior biomechanical performance of horizontal fiber posts in teeth with deep mesio-occlusal-distal (MOD) cavities, showing increased fracture resistance with minimal stress concentration. Similarly, Bromberg et al. (2016) concluded that teeth restored with horizontal fiber posts exhibited fracture resistance comparable to that of onlays. Other studies, such as those by Karzoun et al. (2015), confirmed that horizontal fiber posts significantly improve fracture resistance in maxillary premolars with MOD cavities.

In clinical practice, horizontal fiber posts provide a reliable reinforcement method, distributing occlusal forces evenly and preserving natural tooth biomechanics (7). They offer an esthetically superior and conservative approach compared to traditional metal and ceramic restorations. Additionally, emerging techniques, such as the use of acrylic templates for precise post placement, further enhance their clinical application (8).

Overall, horizontal fiber posts present a promising solution for post-endodontic rehabilitation, ensuring improved fracture resistance, functional stability, and long-term success. Their integration into restorative protocols provides a minimally invasive yet effective alternative to conventional post systems, making them a valuable tool in modern endodontic practice.

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"Breaking Barriers: Managing Subcrestal Crown-Root Fractures with Limited Ferrule"

Managing a crown-root fracture is challenging and depends entirely on the extent of the fracture in relation to the alveolar crest. When the fracture line extends longitudinally into the subgingival area, it disrupts the biologic width. In such cases, commonly used treatment options aim to expose the fracture line clinically, allowing for the repair of the fractured root surface [1, 2]. Treatment options for crown-root fractures include apically positioned flaps, orthodontic extrusion, and crown lengthening with osteotomy or osseous recontouring, where the biologic width is restored by surgically removing bone from the restoration margin. Orthodontic extrusion is a time-consuming procedure and may be prone to relapse due to the stretching of periodontal fibers. Another approach is intentional replantation, also known as intra-alveolar transplantation, which involves extracting the tooth, repositioning it in a more coronal position, and then splinting it in place [3, 4]. A novel, minimally invasive approach for managing a crown-root fracture encroaching on the biologic width involves the use of Biodentine. Biodentine offers several advantages, particularly its ability to promote reattachment and facilitate repair. Here are three key challenges to consider: 1. Deep marginal elevation and violation of biological width 2. Crown lengthening 3. Incomplete ferrule.

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Solutions to the Challenges:

Violation of Biologic Width – occurs when a dental restoration is placed too close to the alveolar bone, encroaching on the naturally occurring space needed for the soft tissues (junctional epithelium and connective tissue) to attach to the tooth, potentially causing inflammation and tissue irritation if not done properly; however, when performed with correct technique, Deep marginal elevation can be a minimally invasive alternative to surgical crown lengthening, minimizing the risk of violating the biological width. Biodentine, a bioactive material, plays a crucial role in cementogenesis and osteogenesis. Research shows that Biodentine enhances osteoblastic differentiation by increasing alkaline phosphatase enzyme activity and promoting the formation of calcific nodules in osteoblastic cells, significantly improving mineralization. Additionally, it inhibits osteoclastic differentiation and reduces tartrate-resistant acid phosphatase activity in macrophages, thereby minimizing resorption. When placed at the fracture site, Biodentine aids in periodontal attachment, facilitating better healing and regeneration [5].

Crown Lengthening – Traditional surgical flap raising for crown lengthening is time-consuming, involves extensive healing, and often leads to significant bleeding. To overcome these drawbacks, electrocautery

can be used to remove gingival tissue with minimal bleeding, allowing better visibility of the fracture site. This approach enhances bonding strength and improves the marginal adaptability of the direct restorative material.

Incomplete Ferrule

In endodontically treated teeth (ETT), a post-and-core restoration is often recommended due to the potential lack of sufficient remaining coronal structure. Ideally, a ferrule on sound tooth structure is suggested to enhance fracture resistance. While some studies indicate that an incomplete ferrule provides less reinforcement than a complete ferrule, others report comparable or even superior outcomes with incomplete ferrule configurations [6-10]. Since the impact of different incomplete ferrule designs on fracture resistance remains uncertain, clinical decisions should prioritize a circumferential ferrule whenever possible. However, if achieving a complete ferrule is not feasible, an incomplete ferrule can serve as a viable alternative [11-13].

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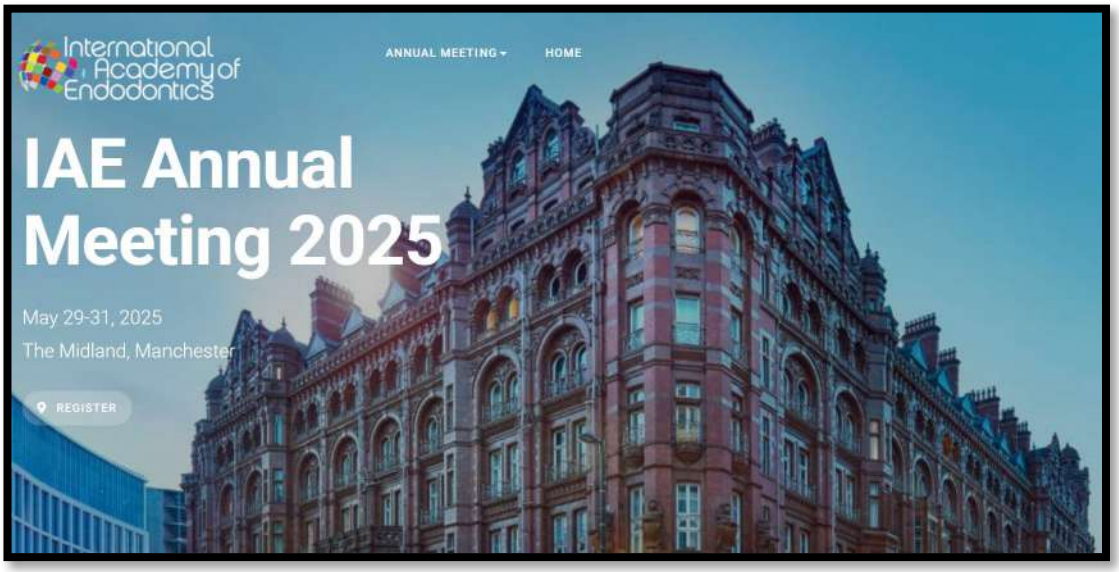
What next?

IES EVENTS TO COME 2025

Indian Endodontic Society is all set to host the IESCON2025 scientific extravaganza in the enchanting paradise of Goa, India, a destination as inspiring as the innovations we seek to explore.
Engaging keynote presentations, hands-on workshops, and interactive discussions, this conference offers a unique platform for exchanging ideas, forging connections, and inspiring the next wave of breakthroughs in our field.
Register soon on iescon2025.com.

AAE25
April 2-5, 2025
Boston, MA

Welcome to the most anticipated dental event of the year - the AAE25 Annual Meeting! Get ready to embark on an unforgettable journey into the future of endodontics. Join us in the vibrant city of Boston, where innovation, education, and networking converge.



The goal of the meeting is to provide advanced knowledge and understanding, to give inspiration through basic science and clinical leadership, and to provide serious mentorship for all attendees.

EUROPEAN ENDODONTIC SOCIETY

This congress offers a state-of-the-art scientific programme alongside an engaging social agenda, allowing participants to explore the latest advancements in endodontology while enjoying the charm and culture of Paris.

ENDO MINDBENDER

Test your knowledge of legendary endodontists who've shaped the field of dentistry. Solve the puzzle to reveal letters for the final message—something every dental professional knows well.

IES Times Endo Mindbender

GRONSMAS

GINLE

INWEE

ONHEC

HDSLRIEC

EDDLRU

UNCANABH

RIEAMFND

NRBEDE

CFDAARUH

	Y		

K			W

			T

T		

Solve the anagrams to reveal the letters for the final message

ANSWERS

GRONSMAS — GROSSMAN

GINLE — INGLE

INWEE — WEINE

ONHEC — COHEN

HDSLRIEC — SCHILDER

EDDLRU — RUDDLE

UNCANABH — BUCHANAN

RIEAMFND — FRIEDMAN

NRBEDE — BENDER

CFDAARUH — FAUCHARD

EYES SEE WHAT THE MIND KNOWS

The Debutante

OdneClean (Odne Inc.)

OdneClean is the first cavitation-based root canal debridement system utilizing saline as the primary irrigant. Its ultra-thin OdneClean Tip (190µm) generates a cavitation cloud within the root canal, producing a high-energy cavitation jet that effectively disrupts biofilm and removes debris. This innovative technology enhances debridement efficiency while minimizing the use of traditional irrigants, potentially improving treatment outcomes in endodontic therapy.

https://odne.co/odne-clean/

ES Vac (Engineered Endodontics)

Studies have shown that apical negative pressure irrigation can prevent against a hypochlorite accident due to significantly lower apical debris extrusion when compared to conventional irrigation. Apical negative-pressure irrigation with ES Vac can achieve significantly better root canal cleaning at the apical third in less exposure time than traditional positive-pressure irrigation. Additionally, research shows that patients have less post-op pain when negative pressure irrigation is performed during their root canal therapy. ES Vac is the latest single handed apical negative pressure irrigation system on the market!

E.S. Vac is to be used as the final irrigation of the canal after gross debris removal.

Kit Contains:

- Suction connector
- suction hose
- 12ml syringe
- Delivery/suction needle device

- Comes in 3 different suction gauges:
  - 23 gauge
  - 27 gauge
  - 30 gauge
- All suction needles are closed-end, dual side port for superior suction and debris removal in final irrigation of canal.

The suction connector has to be plugged into the universal suction connector.

https://www.endodonticsol.com/es-vac/ https://store.engineeredendo.com/

SmartLite Pro EndoActivator (Dentsply Sirona)

The SmartLite Pro EndoActivator™ by Dentsply Sirona is a cordless, sonic-powered device that enhances root canal disinfection by activating irrigants with elliptical, multi- directional motion, improving penetration into complex canal anatomies like fins, lateral canals, and anastomoses. This results in better cleaning and improved sealing of dentinal tubules. It features a lightweight handpiece with a 360° rotatable attachment for optical ergonomics, two sonic speeds (18,000 and 3,000 cycles/min), and a smart battery system for quick charging and easy replacement. The flexible, non-cutting plastic tips are available in small, medium, and medium long sizes to suit various canal anatomies. Compatible with ProTaper Ultimate™, WaveOne® Gold, and TruNatomy®, it achieves effective cleaning in just 90 seconds. A special feature of SmartLite Pro EndoActivator™ is that as part of a modular system, it also supports interchangeable tips for curing, transillumination, and sonic activation, offering versatile clinical functionality.

https://www.dentsplysirona.com/en-us/discover/discover-by-brand/smartlite-pro-endoactivator.html

Excalibur NiTi Rotary files (Zarc)

Endodontics demands precision, efficiency, and careful management of root canals to ensure the success of each treatment. There is a new addition to the existing plethora of NiTi rotary files- Excalibur!

Zarc's Excalibur is a 5 % taper, single reciprocating file system (150° anticlockwise/30° clockwise) featuring advanced gold heat treatment and characterized by its absence of shape memory. According to the manufacturer, it is the first truly conservative single reciprocating file system, removing less dentin than other options and ensuring greater preservation of dental structure.

The file system includes four different instruments, providing specialists the ability to select the one t hat best fits their clinical needs:

- Excalibur® File E20 Small (020/.05)
- Excalibur® File E25 Regular (025/.05)
- Excalibur® File E35 Medium (035/.05)
- Excalibur® File E45 Large (045/.05)

Excalibur Glider is a reciprocating glide path file made of pink alloy and according to the manufacturer has advanced flexibility and shape memory control. The manufacturer also claims it provides sufficient torsional resistance to advance the file into very narrow or calcified canals.
https://zarc4endo.com/en/reciprocating-files-excalibur-glider/

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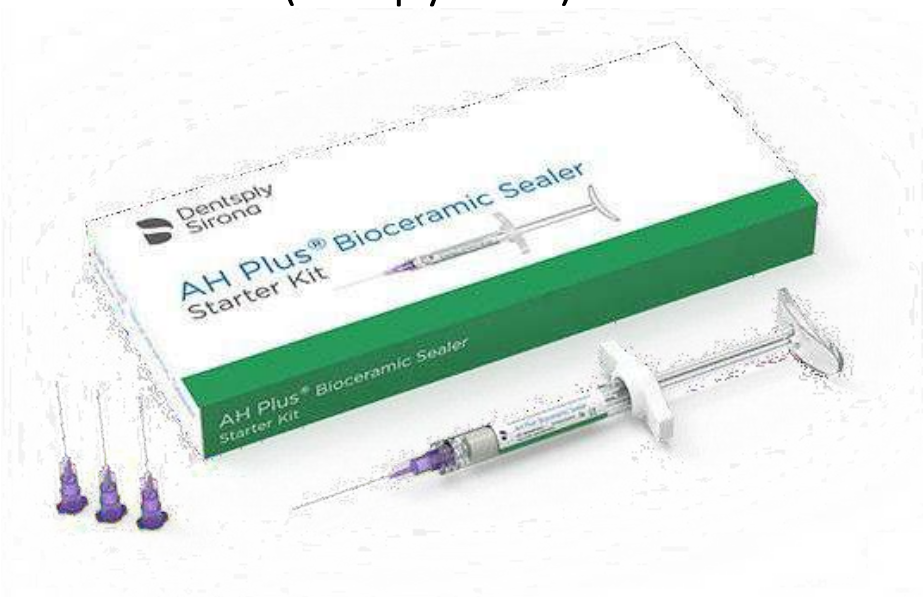
AH Plus Bioceramic Sealer (Dentsply Sirona)



AH Plus® Bioceramic sealer by Dentsply Sirona is a high-performance bioceramic root canal sealer offering excellent sealing ability, biocompatibility, and ease of use. With low shrinkage, solubility, and strong adhesion to dentin and gutta-percha, it ensures a durable seal. According to the manufacturer, it sets quickly, has a high washout resistance and is more radiopaque compared to other popular bioceramic sealers. It is compatible with warm and cold techniques and maintains a consistent viscosity. This sealer is initially antimicrobial and becomes non-cytotoxic within three weeks. Its pre- mixed, dual-paste system allows clean, efficient application. It sets reliably in humid conditions and enables 100% success in re-establishing patency during retreatment procedures.

https://shopse.dentsplysirona.com/en-za/explore/endodontics/ah-plus-bioceramic- sealer.html

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- H.E. Luccock

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