issn 2193-4673 • Vol. 19 • Issue 2/2023

2/23

roots

international magazine of endodontics

interview
How to handle complex endodontic cases

case report
Broken file management with Er:YAG laser and SWEEPS technology

meetings
ROOTS SUMMIT 2024: Athens gears up to host premier endodontic meeting

dti Dental Tribune International

FKG
swiss endo

XP ENDO® RISE Retreatment

Simplify Your Retreatment Protocol

2x faster
than a conventional competitor
to perform retreatment procedures[1]

2x more
removal of remaining
root filling material than PUI[2]

XP-endo® Rise Shaper

Finisher R

www.fkg.ch/xp-endo-rise

[1]Al Omari T, Mustafa R, Al-Fodeh R, El-Farraj H, Khaled W, Jamleh A. Debris Extrusion Using Reciproc Blue and XP Endo Shaper Systems in Root Canal Retreatment. Int J Dent. 2021 Mar 24;2021:6697587. doi:10.1155/2021/6697587
[2]De-Deus G, Belladonna FG, Zuolo AS, et al. XP-endo Finisher R instrument optimizes the removal of root filling remnants in oval-shaped canals. Int Endod J. 2019;52(6):899907. doi:10.1111/iej.13077

Steve Jones

Co-chairman
ROOTS SUMMIT

Welcome to the autumn issue of roots magazine

A cohesive international community is a rare thing but eminently achievable when the community is a group of like-minded individuals with a clear goal. That has been the basis for the original and most established online endodontic study group, ROOTS (www.facebook.com/groups/rootsendo), for its entire existence. Sharing endodontic knowledge, articles, studies, tips and advice online free of politics and without hierarchy is something that has stayed at the core of the ROOTS group from its beginnings in the 1990s.

There are many events in both the dental and endodontic worlds, but we had noticed that there were scientific events and commercial events but no event that focused on how leading-edge scientific findings could be rapidly translated to practice for the benefit of patients. This is how ROOTS SUMMIT, now well into its third decade, was born.

Our community is well represented in this issue of roots **magazine**. In addition to the interviews with Drs Josiane Almeida and Ruth Pérez-Alfayate, we have contributions from Dr Gregori M. Kurtzman, who has been a member of ROOTS since it was an e-mail list, and two of his co-authors, Drs Tanvi Paliwal and Lanka Mahesh. Another member of ROOTS, Dr Andreea Oana Cristescu Roșu has a timely and interesting article regarding new technologies.

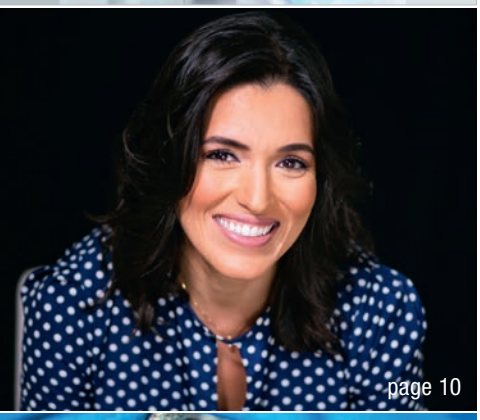
There are also two contributions to this issue from Dr Bartłomiej Karaś, a long-time member of ROOTS and winner of the best case presentation at ROOTS SUMMIT 2022 in Prague. Dr Karaś is one of the more recent of the numerous clinicians and speakers who have come into prominence in part due to their involvement with the ROOTS group. One of the main ROOTS SUMMIT programme speakers next year in Athens will be Dr Rajiv Patel, for example, and of course Dr Antonis Chaniotis is another. When going through back issues of roots **magazine**, I could not find an issue that did not have at least one article written by a member of the ROOTS alumni.

Perhaps this is something that you are interested in pursuing? You could do this by writing an article or by giving a case presentation at ROOTS SUMMIT. If either one of those interests you, there will be multiple posts on the ROOTS Facebook group regarding this. I also invite you to go to the ROOTS SUMMIT website (www.roots-summit.com) for the information on how to participate and article requirements. Free entry to ROOTS SUMMIT is the prize for any articles accepted for publication in our next issue.

We hope that you enjoy this issue, and whether you wish to write an article or to read one, we hope that you will join our ROOTS Facebook community and attend ROOTS SUMMIT in Athens in May 2024.

Steve Jones
Co-chairman of ROOTS SUMMIT

page 06


page 10

page 22

Cover image courtesy of DIRECTEndodontics (www.directendo.com).

editorial

Welcome to the autumn issue of roots magazine 03
Steve Jones

news

Combined treatment potentiates anti-biofilm and anti-cariogenic efficacy 06
Iveta Ramonaite

Good oral health associated with improved survival among head and neck cancer patients 08
Anisha Hall Hoppe

interview

Prominent endodontist shares expertise on treating patients undergoing radiotherapy 10
An interview with Dr Josiane Almeida

How to handle complex endodontic cases 12
An interview with Dr Ruth Pérez-Alfayate

research

Comparative evaluation of apical debris extrusion associated with using reciprocating and rotary systems with variable tapers, including single- and multiple-file sequences, and the influence of the glide path 14
Drs Tanvi Paliwal, Lanka Mahesh, Gregori M. Kurtzman & Rohit Paul

industry report

On the pulse of endodontics—the key role of new technologies in root canal therapy 18
Dr Andreea Oana Cristescu Roşu

case report

The piston technique—a novel approach to canal obturation 22
Drs Grzegorz Witkowski & Bartłomiej Karaś

Broken file management with Er:YAG laser and SWEEPS technology—a case series 28
Dr Bartłomiej Karaś

Chairside fabrication of a nano-ceramic hybrid composite endocrown for a severely damaged molar after endodontic treatment 34
Drs Alejandro Bertoldi Hepburn & Matías Scazzola

manufacturer news 42

features

Research examines burn-out during COVID-19, offers strategies for resilience 44
Iveta Ramonaite

ROOTS SUMMIT calls for submissions and launches roots magazine contest 45

meetings

ROOTS SUMMIT 2024: Athens gears up to host premier endodontic meeting 46
Franziska Beier

International events 48

about the publisher

submission guidelines 49
international imprint 50

NEW PRODUCTS

INNOVATIVE NiTi FILE SYSTEM

HyFlex EDM
OGSF Sequence

Further information

CORDLESS ENDO MOTOR

CanalPro X-Move
Full freedom of movement

Further information

COLTENE

008145 07.23

Combined treatment potentiates anti-biofilm and anti-cariogenic efficacy

By Iveta Ramonaite, Dental Tribune International

According to research, dental caries is the most prevalent and costly biofilm-induced oral disease. Fluoride as the primary anti-cariogenic agent cannot both sufficiently control biofilm and prevent enamel demineralisation and can lead to risks associated with overexposure to fluoride, especially in children. However, a recent study has shown that using a combination of an iron oxide nanoparticle (ferumoxytol, Fer) approved by the US Food and Drug Administration and stannous fluoride (SnF_2), even at lower concentrations, can help inhibit both biofilm accumulation and enamel damage. The study has the potential to prevent dental caries and to reduce fluoride exposure in patients.

"Traditional treatments often come short in managing the complex biofilm environment in the mouth," senior researcher Dr Hyun (Michel) Koo, a co-founding director of the Center for Innovation and Precision Dentistry and a professor in the Department of Orthodontics at the University of Pennsylvania, said in a press release. "Our combined treatment not only amplifies the effectiveness of each agent but does so with a lower dosage, hinting at a potentially revolutionary method for caries prevention in high-risk individuals," he continued.

The researchers found that Fer can stabilise SnF_2 and that it shows increased catalytic activity when combined with SnF_2. Additionally, they discovered that fluoride, iron and tin form a protective film on tooth enamel to protect it against further demineralisation. It was also reported that the combined therapy did not disrupt the ecological balance of the oral microbiota and showed no side effects on the surrounding host tissue.

Senior author Dr David Cormode, an associate professor of radiology at the university, commented: "What excites us most about these findings is the multifaceted approach to caries prevention. It's not just about inhibiting bacterial growth or protecting the enamel; it's a holistic method that targets both the biological and physico-chemical aspects of dental caries."

"While we are happy with these initial findings, we still aim to dig deeper in understanding the intricate ways Fer and SnF_2 synergise to boost the therapeutic effects," Dr Koo added.

Since both Fer and SnF_2 are commercially available, the research findings could quickly be translated into clinical practice. However, further research is needed to closely examine the mechanisms of interaction between SnF_2 and Fer, the process of reactive oxygen species generation and the formation and efficacy of the protective enamel film. "There's potential here not just in dental care but in exploring how this combination can be targeted against other biofilms," Dr Cormode said.

Editorial note: The study, titled "Iron oxide nanozymes stabilize stannous fluoride for targeted biofilm killing and synergistic oral disease prevention", was published online on 29 September 2023 in Nature Communications.

ORDER now our new EUROPEAN made NiTi FILES

With our products you keep using your current technique at our great low price

DIRECTENDO.COM

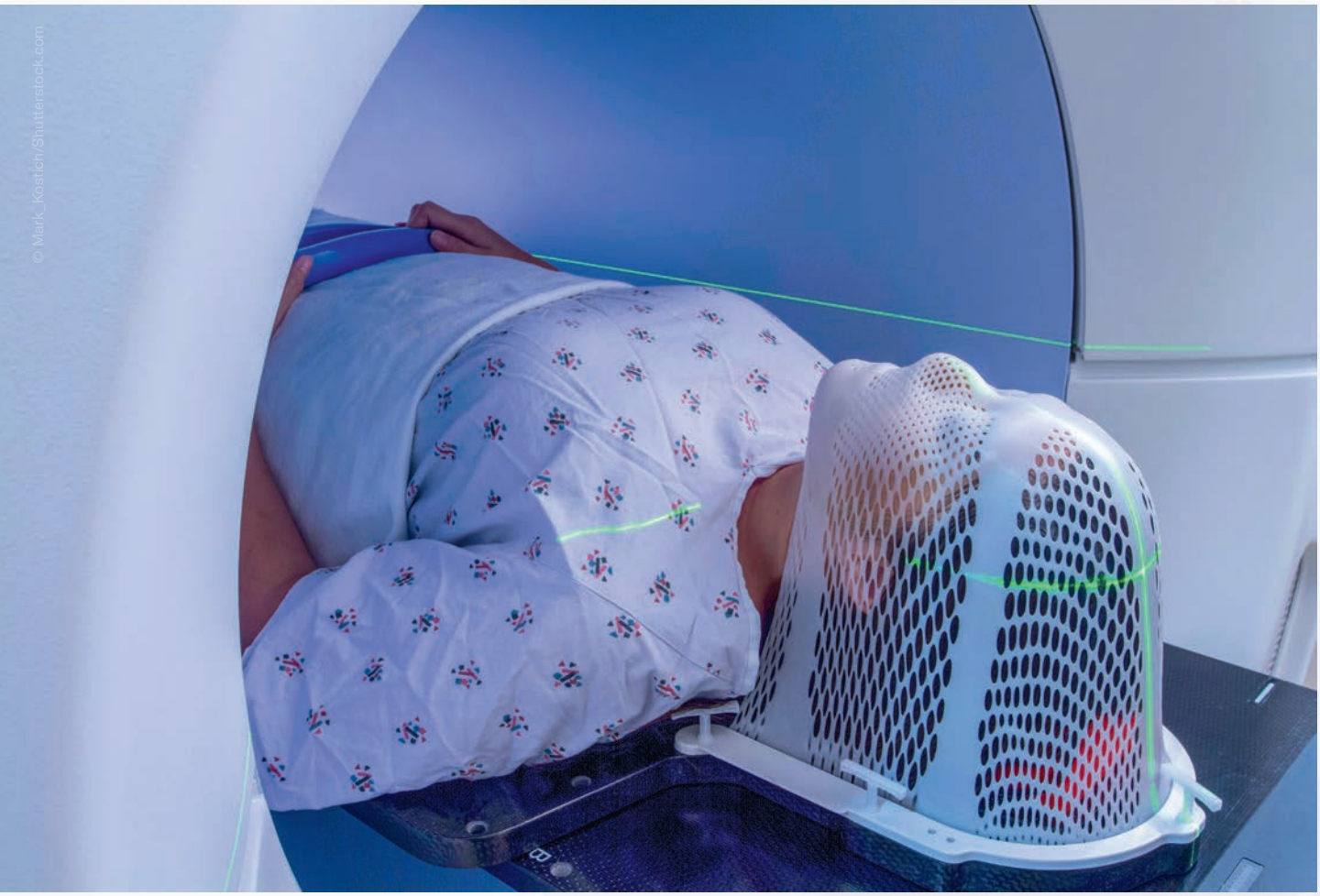
follow us on social media

Good oral health associated with improved survival among head and neck cancer patients

By Anisha Hall Hoppe, Dental Tribune International

Head and neck squamous cell carcinoma (HNSCC) is a global health concern, ranking as the sixth most common malignancy worldwide. Poor oral health has emerged as an independent risk factor for HNSCC. Various aspects of poor oral health, such as tooth loss, periodontal disease, infrequent toothbrushing and lack of dental visits, have been associated with a moderate increase in HNSCC risk. However, limited data exists on how oral health has an impact on HNSCC survival. A recent study aimed to address this gap by analysing data from the International Head and Neck Cancer Epidemiology Consortium, representing the largest analysis of its kind to date.

This comprehensive analysis included 10,042 HNSCC patients from various geographic regions and focused on demographics, clinical factors, oral health, treatment and survival. The majority of patients were male, and the participants had a mean age of 59.8 years. Most had late-stage cancer and received surgery-based treatments.



© Mark_Kostich/Shutterstock.com

Retention of natural dentition and frequency of dental visits have been identified as factors in head and neck squamous cell carcinoma survival.

Regarding oral health, the majority had more than 20 natural teeth, brushed their teeth less than once daily, used mouthwash and had visited the dentist one to five times in the past decade. The study revealed that HNSCC patients with more than ten natural teeth had better survival compared with those with no teeth, and those with a history of more than five dental visits in the past decade had better survival compared with those with no dental visits. These associations were particularly pronounced in patients with hypopharyngeal, laryngeal and unspecified HNSCC. Other oral health factors like gingival bleeding, toothbrushing frequency and mouthwash use showed smaller survival differences.

These findings highlight the significance of natural dentition and frequency of dental visits as independent prognostic factors in HNSCC. Frequent dental visits were associated with early-stage HNSCC diagnosis, indicating the potential for early disease detection and improved survival. Geographic region was also found to be relevant to survival, patients in South America and Europe experiencing better outcomes than those in North America.

Despite its strengths, the study had limitations. There were variations in the definition and measurement of oral health parameters across studies and a lack of information on post-treatment oral hygiene and alcohol consumption for some participants. Nevertheless, these results emphasise the importance of maintaining oral health in HNSCC patients not only to prevent treatment-related complications, but also to potentially improve survival. Further prospective studies are needed to confirm and expand upon these findings and to explore the underlying mechanisms. Although the exact mechanisms linking oral health to cancer remain unclear, hypotheses include chronic trauma, oral inflammation and alterations in the oral microbiome.

In 2020, there were 878,348 newly diagnosed cases and 444,347 reported deaths associated with this cancer. There are regional variations reflecting differences in the distribution of known risk factors, including smoking, alcohol consumption, human papillomavirus infection and socio-economic status.

Editorial note: The study, titled "Poor oral health influences head and neck cancer patient survival: An International Head and Neck Cancer Epidemiology Consortium pooled analysis", was published online on 19 September 2023 in the Journal of the National Cancer Institute, *ahead of inclusion in an issue.*

AD