

# roots

international magazine of endodontics

## study

3D accuracy of dynamic navigation  
in locating calcified canals

## case report

The importance of irrigation  
in challenging cases

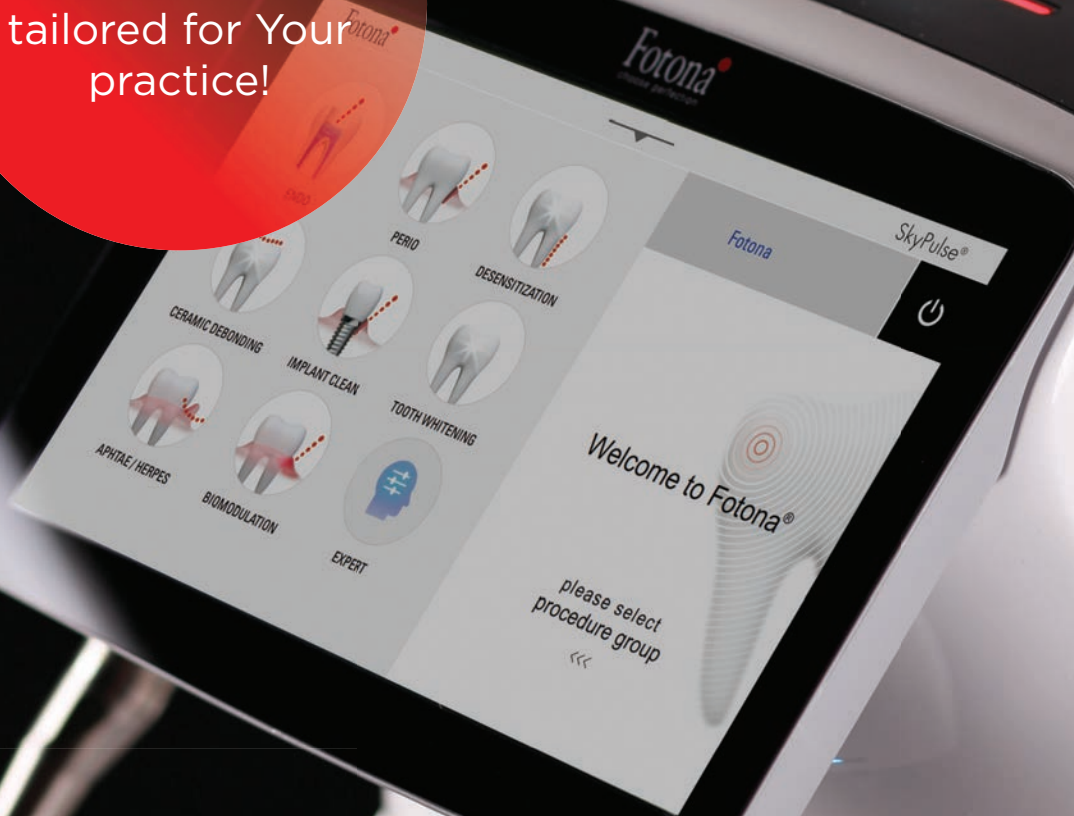
## technique

Remove: The ultimate solution  
for removing gutta-percha

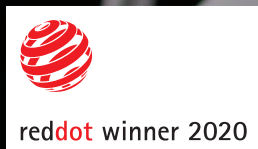
# SkyPulse®

A new generation of compact  
Fotona lasers

A compact, easy  
to use Er:YAG Laser  
tailored for Your  
practice!



103696 CE/ENG/1



Committed to Engineering

The Highest Performance, Best Made Laser Systems in the World

**Fotona**  
choose perfection

[www.fotona.com](http://www.fotona.com)

**Magda Wojtkiewicz**

Managing Editor



# New challenges in endodontic treatment

**Endodontic treatment** during the COVID-19 pandemic seems to be more challenging than ever before. How do dentists ensure both their own safety and the safety of patients during therapy which cannot be performed without drilling?

While the Centers for Disease Control and Prevention recommended restricted use of aerosol-generating procedures in dentistry, such as root canal preparation, and minimised risk by offering less invasive palliative care to emergency patients, many endodontists carried out successful treatment. Does it mean that they were taking unnecessary risk? Definitely not.

The results of Patel et al. have shown that palliative care has been proved successful, but it is important to realise that this level of endodontic emergency management is only a temporary solution and that ultimately aerosol-generating procedures cannot be avoided.<sup>1</sup> Furthermore, some endodontic emergencies, such as cellulitis, can lead to major health problems, including systemic inflammatory response syndrome, osteomyelitis, parapharyngeal abscess, cavernous sinus thrombosis and sepsis, and treatment for such endodontic emergencies should not be postponed by more than several days or even hours.

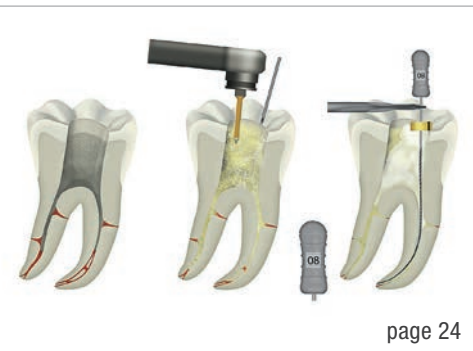
Dental professionals are very aware of the importance of infection control and implement cleaning and disinfection procedures in dental offices daily. Also the use of protective equipment, such as masks, shields and disposable aprons, is a standard procedure in most clinics; therefore, there is nothing new with respect to strict hygiene protocols in dentistry.

In conclusion, avoiding endodontic treatment during the COVID-19 pandemic is not a solution, but all procedures should be conducted according to the protocols and recommendations of the relevant advising organisations. It will probably take a great deal of time before we learn how to live with SARS-CoV-2, but what we know so far has made it clear that respecting the necessary procedures can allow us all to work safely.

Magda Wojtkiewicz  
Managing Editor

## Reference

- <sup>1</sup> Patel B, Eskander MA, Ruparel NB. To drill or not to drill: management of endodontic emergencies and in-process patients during the COVID-19 pandemic. *J Endod.* 2020 Aug 22;46(11):1559–69. doi: 10.1016/j.joen.2020.08.008.



Cover image courtesy of  
Sergii Kuchugurnyi/Shutterstock.com



**editorial**

**New challenges** in endodontic treatment 03  
Magda Wojtkiewicz

**feature**

**COVID-19: Major stress factor** among dental staff 06  
Iveta Ramonaite

**Palliative care** successful for **endodontic emergencies** during lockdown 08  
Dental Tribune International

**study**

**3D accuracy** of dynamic navigation technology  
**in locating calcified canals** 10  
Drs Sameer D. Jain, Caroline K. Carrico & Ido Bermanis

**case report**

**Endodontic microsurgery** of an anatomically challenging zone  
**using dynamic navigation** 16  
Prof. Paula Andrea Villa Machado, Drs Felipe Restrepo & Kenneth S. Serota

**The importance of irrigation** in challenging cases 20  
Dr Marco Martignoni

**research**

Innovative endodontics using **SWEEPS** technology 24  
Drs Giovanni Olivi, Linhlan Nguyen, Matteo Olivi & Jason Pang

**technique**

**Remover: The ultimate solution** for removing **gutta-percha** 32  
Prof. Walid Nehme, Drs Jean-Philippe Mallet, B renger Soulag es,  
Mathilde Michel & Franck Diemer

**industry report**

**One-step** post and core **build-up of an endodontically** treated tooth 36  
Dr Giancarlo Pongione

**manufacturer news** 38

**news** 41

**practice management**

**Low-risk** dentistry **vs high-risk** dentistry 42  
Dr Miguel Stanley

Successful **communication** in your **daily practice**  
Part XIII: How to deal with rude patients 46  
Dr Anna Maria Yiannikos

**about the publisher**

submission guidelines 48

international imprint 50



2D & 3D  
exams

MAC  
Compatible

75µm  
High resolution  
image

up to  
50%  
dose reduction

1 MINUTE  
implant planning  
report

0  
compromise  
with 3D image  
quality



IT'S TIME FOR  
TRUE LOW DOSE  
CBCT

# COVID-19: Major stress factor among dental staff

By Iveta Ramonaite, Dental Tribune International

**Dentists have resumed** the provision of patient care, but are experiencing great anxiety arising from extensive changes to the workflow and fear of contracting SARS-CoV-2 in the practice. Besides work-related stress, some dental professionals are burdened with personal stress related to family, finances and the current state of affairs. To help dental staff cope with the anxiety brought about by continually updated safety and cleaning protocols and changes in workplace policies, a number of dental organisations and health authorities have recently offered their guidance on lightening the load of COVID-19 and associated stress factors in the dental office.

As reported by Dental Tribune International, COVID-19 has exerted some devastating psychological effects on dental professionals. Many dentists are finding it wearisome and demanding to work in an environment with ever-changing measures to avoid infection and to cope with personal stress while managing the fear of contracting the virus.

In his paper on the impact of the COVID-19 pandemic on dentistry, Dr J. William Claytor Jr, associate director of the North Carolina Caring Dental Professionals, said that dentists are currently dealing with an unprecedented number of concerns, including unemployment, student loan debts, limited income from emergencies, job losses in other industries, a declining and unstable stock market, increased drug use, addictions, family tensions and halted public education, and stress and burnout.

To offer assurance to dental staff, the California Dental Association (CDA) recommends advising employees of the plans in place to ensure safety in the workplace. Staff should be updated on new infection control procedures and changes related to practice operation and appointment scheduling. After any policies and protocols related to dental practice are reviewed, resulting updates should also be communicated to staff, and they should receive the latest COVID-19-related information that could affect their jobs. CDA recommends retrieving information from the websites of trusted regulatory agencies such as the Centers for Disease Control and Prevention and the World Health Organization.

Keeping employees in the loop communicates that the practice is aware of ongoing changes to recommendations and continues to update its practices accordingly in order to minimise the risk of exposure of both patients and staff.

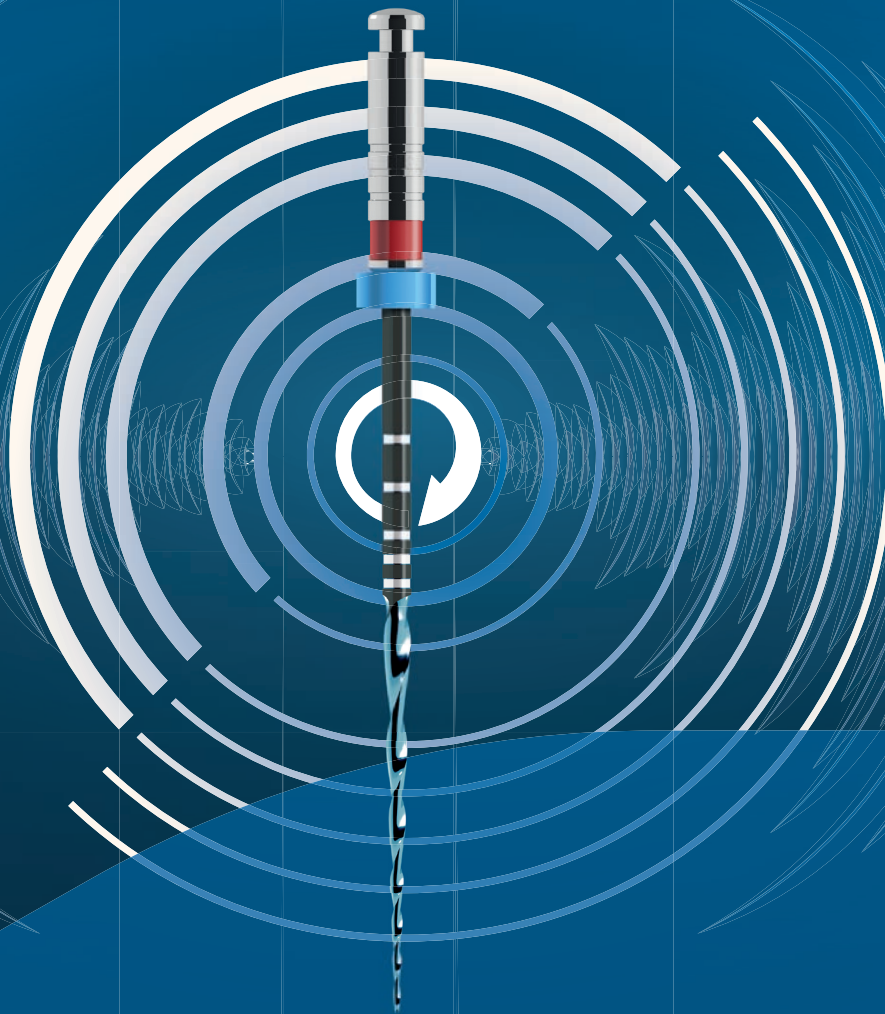
## Protecting mental health of staff

Dental staff are currently extremely susceptible to deteriorating mental health, which is why the well-being of staff should be regarded with the utmost gravity. CDA recommends encouraging employees to share their concerns and, in listening to these, adopting an attitude that is empathic and receptive. This will not only demonstrate engagement, but also help resolve the issue at hand more promptly, CDA noted. Employees who are unwilling or afraid to share their concerns should be offered a channel to express their concerns anonymously.

Other measures to show support and ease tension among employees include relaxing certain pre-pandemic practices and policies, such as reducing the number of employees in the office by implementing alternative workweeks, staggered shifts or telecommuting weeks. CDA believes that open dialogue between dentists and staff will facilitate the establishment of clear responsibilities and expectations and boost employee morale.

Also the British Dental Association published a webinar that addressed stress and mental well-being among dentists. The webinar helps recognise the signs of stress among staff, provides advice on how to prevent it and teaches how to support those whose mental health has been undermined.

*Editorial note: Additional guidance for practice management and fostering employees' mental health during the COVID-19 pandemic has been published by the American Dental Association and can be found at <https://success.ada.org/en/wellness>. Strategies for coping with COVID-19-related stress have been published by the Centers for Disease Control and Prevention and can be accessed on the CEDE website, <https://www.cdc.gov>.*



## VDW.ROTATE™ NiTi Root Canal File

The remix taking rotary preparation to the next level

### VERSATILITY

VDW.ROTATE™ includes an intuitive 3 file basic sequence plus a wide range of larger files for various clinical cases with matching paper points and obturators.

Be virtuoso!

### RESPECT OF THE NATURAL CANAL ANATOMY

The instruments follow the natural canal anatomy smoothly thanks to its specific heat treatment making the file more flexible without compromising its cutting efficiency.\*

Get in the swing!

### EFFICIENT DEBRIS REMOVAL

The adapted S cross section gives more space for debris removal and provides control of the instrument for a swift, thorough and safe preparation.\*\*

Set the beat!

\*compared to other VDW continuous rotary instruments  
\*\*compared to a centred rotary cross section



Although palliative care in endodontic emergencies brings immediate relief to patients, it is not a long-term solution, and aerosol-generating procedures cannot be avoided forever should treatment restrictions continue.

# Palliative care successful for endodontic emergencies during lockdown

By Dental Tribune International

**During the ongoing COVID-19 pandemic,** aerosol-generating procedures in dentistry have been restricted in order to comply with a recommendation by the Centers for Disease Control and Prevention (CDC), since dental professionals are at high risk of infection. But how can endodontic emergencies be managed without drilling? A study has investigated the topic and found that palliative care seems to be the answer.

The World Health Organization declared SARS-CoV-2 a pandemic on 11 March 2020. Shortly afterwards, countries began to implement lockdowns, shutting businesses and nonessential services. In the USA, elective dental procedures were suspended and, according to the CDC, aerosol-generating procedures were to be avoided. This led to challenges in the management of patients presenting with emergencies as well as concern



“Hopefully, the findings of our study will help dentists manage patients without aerosol-generating procedures during periods of lockdown.”

successful. Only one tooth was fractured and nonrestorable (3%), leading to the failed outcome of tooth extraction. The remaining four outcome failures (13%) were due to patient unwillingness to undergo school-mandated SARS-CoV-2 testing or patient unwillingness to continue treatment because of perceived risk of SARS-CoV-2 infection.

In an interview with Dental Tribune International, study co-author Dr. Biraj Patel explained the reasoning behind this study: “The school decided to defer aerosol-generating procedures in accordance with the state guidelines. We managed cases very differently to what we would have routinely done and were interested to see how successful we were. Furthermore, the literature has limited data on the effect of delaying treatment in endodontics and the outcomes of the palliative management of endodontic disease. Our report on the management of endodontic emergencies has important clinical implications for the dental community worldwide and aims to provide an insight into the effect of conservative management of endodontic emergencies without the use of aerosol-generating procedures.”

As results have shown, palliative care proved successful for the UT researchers, but it is important to note that this level of endodontic emergency management is only a temporary solution and aerosol-generating procedures cannot be avoided forever. “The state witnessed a lockdown from 23 March to 20 May 2020, and palliative care was successful in managing patient symptoms during this time. However, if this lockdown had been longer, we may have had to reevaluate patients if they became symptomatic and potentially intervene with aerosol-generating procedures,” said Patel.

among dentists about all in-process pending procedures started before the statewide shutdowns.

### To drill or not to drill?

Researchers from the Department of Endodontics at the University of Texas (UT) School of Dentistry conducted a two-part study in order to investigate how endodontists could work around these extreme conditions while managing their patients’ pain. The results of the first part of the study showed that 81% of the 21 patients who presented with endodontic emergencies in 25 teeth during the statewide shutdown required no further treatment or intervention after palliative care at a follow-up rate of 96%.

In the second part, 31 teeth had received partial or full root canal debridement before the statewide shutdown. The mean time for completion of treatment was 13 weeks. At a recall rate of 100%, 77% of the teeth did not experience any adverse events resulting from delays in treatment completion. The most common adverse event was a fractured provisional restoration (13.0%), followed by a painful and/or infectious flare-up (6.4%). These events were managed appropriately and therefore deemed

### What is the long-term solution?

“At present, our school reduces the risk of transmission by testing all patients for SARS-CoV-2 using reverse transcription-polymerase chain reaction (RT-PCR) prior to aerosol-generating procedures,” the endodontist added. “We make sure to follow the state and CDC guidelines, especially with regard to social distancing measures and personal protective equipment. We hope that a better understanding of the transmission of SARS-CoV-2, along with developments in rapid testing, will eventually reduce the risk to healthcare professionals. This will hopefully result in a reduced need for clinics to stay closed. The expectation is that we will see further lockdowns if cases of COVID-19 become uncontrolled. Hopefully, the findings of our study will help dentists manage patients without aerosol-generating procedures during periods of lockdown.”

*Editorial note: The study, titled “To drill or not to drill: Management of endodontic emergencies and in-process patients during the COVID-19 pandemic,” was published on 22 August 2020 in the Journal of Endodontics.*