Dentsply Sirona announces the introduction of another integrated solution to the market: a new 3D imaging software to improve the planning and workflow of endodontic procedures.

With the largest research and development platform in the industry, Dentsply Sirona is committed to its mission of empowering dental professionals to provide better, safer, faster dental care.

York/Salzburg: Dentsply Sirona has developed yet another innovation in endodontics: 3D Endo is the first CBCT-based software that enables endodontic treatments to be preplanned and optimized on the basis of imaging data from the ORTHOPHOS units. This new advancement is also the first software project to combine the know-how and experience of Dentsply Sirona’s market leading engineers, scientists and software developers in both its endodontics and digital radiography units. Based on 3D data and its specific visualization, the practitioner is able to case-specifically recognize the demands on the root canal treatment tooth, analyze the natural shape of the root canal and select the appropriate files using the integrated file database. As a result, the endodontic treatment is more efficient and safer, as well as with significantly improved patient communication.

Since, with the help of a planning report or demonstrative capabilities directly in the software, the practitioner can clearly explain the initial situation and the appropriate treatment to the patient. Dentsply Sirona plans to introduce this software in the coming months upon the receiving the necessary regulatory approval.

For years, Dentsply Sirona has been collaborating and creating integrated solutions in the area of endodontics. Back in 2014, WAVEONE® by Maillefer and RECIPROC® by VDW, both leading reciprocal file systems, were first integrated into the TENEO treatment centers and more recently into the SINIUS centers, which considerably improved the workflow of the Endo function. Now, with new 3D Endo software, Dentsply Sirona will offer an even more comprehensive integrated approach to endodontics which will be available on the market this fall.

“Dentsply Sirona is working to shape the future of endodontics worldwide by continuously striving for better patient outcomes and by empowering dental professionals with world-class innovative solutions, education programs and clinical procedures. This new software is yet another way in which our platform will redefine endodontic care for dental professionals and patients by setting new treatment standards in efficacy, safety and simplicity,” says Dominique Legros, Group Vice President, Dentsply Sirona Endodontics.

Endo Meets 3D
Dentsply Sirona Develops New 3D Endo Software for Better, Safer and Faster Endodontics
sent was a referral patient. Sitting with the patient, giving him his account over the previous six months, he had two previous trips to his local dentist for surgery on his left-submandibular lymph nodes (Fig. 6), which had apparently been swollen. Each time, pathology tests were clear of any cancer-specific markers. CT scanning and conventional radiographic assessment were conducted, with no findings recorded.

Having shared this, the patient reported that he felt his lymph node becoming swollen again, and he was anxious about it. His account was taken very seriously. Additionally, he reported that two of his mandibular premolars were aching, since root canal treatments had been started at a different clinic, but the dentist had been unable to finish them. With the patient’s permission, a new CBCT scan was obtained, and I asked the patient to wait for an hour to give me time to study it.

After the general view first and then going into details, I realized the two mandibular premolars were indeed in need of endodontic treatment. However, knowing from clinical experience that premolars may have various clinical manifestations, I continued looking for other sources of potential problems, but without disregarding the premolars as the culprits (Fig. 2).

Analysing the CBCT sections, trying different filters and settings, looking into the mandibular molar with a large filling, and studying the bone around it, I observed something unusual. There was a small abscess migrating towards the internal angle of the mandible (Fig. 3) and creating an area of bone erosion (Fig. 4). This could be the pathology causing the patient’s suffering, in addition to the two mandibular premolars.

At this point, one might be happy with the diagnostic findings and race to treat the problem, affecting the mandibular dento-alveolar. However, still unsatisfied with the overall findings, I turned to analysing the maxilla, where I found that the second molar had internal decay and cervical internal resorption, creating an infection pathway into the maxillary sinus (Fig. 4)

Judging by the general view first and then going into details, I realized the two mandibular premolars were indeed in need of endodontic treatment. However, knowing from clinical experience that premolars may have various clinical manifestations, I continued looking for other sources of potential problems, but without disregarding the premolars as the culprits (Fig. 2).

Analysing the CBCT sections, trying different filters and settings, looking into the mandibular molar with a large filling, and studying the bone around it, I observed something unusual. There was a small abscess migrating towards the internal angle of the mandible (Fig. 3) and creating an area of bone erosion (Fig. 4). This could be the pathology causing the patient’s suffering, in addition to the two mandibular premolars.

At this point, one might be happy with the diagnostic findings and race to treat the problem, affecting the mandibular dento-alveolar. However, still unsatisfied with the overall findings, I turned to analysing the maxilla, where I found that the second molar had internal decay and cervical internal resorption, creating an infection pathway into the maxillary sinus (Fig. 4).

I explained the situation to the patient and proposed retreatment of the two mandibular premolars, as well as conducting primary root canal treatment on the mandibular molar and the maxillary molar. The patient agreed, and the four treatments were performed in one session, using the TF Adaptive system. Keratol for shaping and EndoVac (Kerr) for chemical preparation according to the “A” sequence of irrigation protocols, followed by 3-D obturation of the root canal system using the Elements Obturation Unit (Kerr; Fig. 5). Antibiotics were prescribed for the patient to help his body combat the submandibular infection. Although I prescribed systemic antibacterial medication very rarely, I did so in this case because it was not clear what had happened with the lymph nodes and if they were still functional, based on the immediate postoperative radiographs of the mandible (Fig. 6) and the maxillary (Fig. 7). A minor postoperative reaction (moderate pain, no swelling) was observed and had completely resolved a week later.

The next clinical case is somewhat similar and involved an extra-oral sinus tract (Fig. 8). A middle-aged female patient was referred to the office with an extra-oral fistula in the posterior submandibular area. According to the patient, she had had no pain or swelling and the fistula had appeared several weeks before she presented to the clinic.

At first, she thought it was a skin problem, but then realized that there was pus draining and the opening was growing larger. Upon consulting with a dermatologist, who said the problem was most probably of dental origin, the patient consulted her dentist, who had previously placed an implant for her. The dentist thought the infection was associated with her third molar and not the implant, and suggested extraction of the tooth. The patient wanted to retain the tooth and hence sought an endodontic consultation regarding this option.

A new CBCT scan (i-CAT, Imaging Sciences International, Fig. 9) confirmed that the third molar had an internal sinus tract, which had created the fistula. This could all be solved by root canal treatment on the molar, followed by a crown and follow-up treatment, with a good prognosis for overall long-term success. The patient was happy to hear that and requested treatment as soon as possible.

The root canal was treated (Fig. 10), using the TF Adaptive system for shaping and EndoVac for chemical preparation according to the “A” sequence of irrigation protocol, followed by 3-D obturation of the root canal system using the Elements Obturation Unit (Fig. 5). Follow-up records were taken (Figs. 11 & 12), with radiographic check to control bone healing and external facial photographs to compare. The patient was extremely satisfied that her molar could be preserved.

The clinical examples illustrate the importance of diagnosis as the main piece of the puzzle: the importance of “finding it.” Today, the state-of-the-art approach in endodontics requires the use of sophisticated equipment and software to complement the expertise and experience.
of the operator. Only all this in concert allows us to put the pieces of the puzzle together. The patient's subjective account can lead us or sometimes mislead us. We should keep in mind that most of our patients do not know how anatomy works or that pain can be referred from a distant area in the mouth. That is where the objective history and adequate analysis of the diagnostic and clinical findings lead the way.

Fixing the problem requires the most biological approach to root canal treatment, putting our clinical experience to work to provide the best treatment for our patients. Once we are sure we have done the best we can to eliminate all kinds of aggressive conditions and disease, we need to let nature take care of the healing process.

**References**

[1] "Find it, fix it, and leave it alone"—an axiom attributed to Dr Andrew Taylor Still, the founder of osteopathy, and recorded by his students and followers.


The author would like to thank Yulia Vorobyeva Sleiman, interpreter and translator, for her help with this article.

Prof. Philippe Sleiman is an endodontist at the Vilafortuny clinic and training centre in Dubai in the UAE, the Advanced American Dental Center in Abu Dhabi in the UAE and the American Dental Clinic in Dubai. He can be contacted at profsleiman@gmail.com

---

TF Adaptive is the endodontics file system that adapts its movement to give you more control during your procedure.

The **Adaptive Motion Technology** and the motor’s exclusive algorithm allow the instrument to switch between reciprocation and rotation, depending on the amount of pressure placed on the file. Reducing the risks of file breakage and apical extrusion, and improving your patients’ comfort.

To give you more confidence during your canal preparations.
Now, everyone in your dental team can SHOOT!

Ultra-Light
SIMPLE Compact
Accurate
Intuitive

SHOFU Smart Digital EyeSpecial C-II

- The only one true dental camera
- 8 automated pre-set dental modes
- Intuitive one-touch operation with built-in anti-shake
- Large LCD touchscreen with on-screen guide
- Fast auto-focusing capability and excellent depth of field
- Water and chemical resistance
- Registration and imprinting of patient ID
- Uncomplicated photo management system

For more information, simply contact us or your nearest SHOFU dealer.