



Fig. 1



Fig. 2



Fig. 3

# The 20<sup>th</sup> annual SSE conference left nothing to be desired

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**Fig. 1\_** Prof. Pierre Machtou.

**Fig. 2\_** Dr Gilberto Debelian.

**Fig. 3\_** Prof Andrea Mombelli.

Dr Ramachandran Nair had the honour of opening the conference. As one of the founding members, he touched on the history of the Swiss Society for Endodontology (SSE). A group of seven enthusiastic scientists and practitioners evolved into a well-organised society with over 300 members dedicated to the further development of the SSE. After his speech, Dr Nair was awarded with the society's Guldener Prize. This award honours the late Dr Peter H.A. Guldener, who had been the spokesperson of endodontics in Switzerland for the last 30 years. He was also an eminent endodontic practitioner, educator, motivating force, founding member and the first SSE President. The award is endowed with 5,000 Swiss francs and is presented annually at the SSE meetings, provided a worthy recipient is nominated. The award is for achievement of outstanding quality in the field of endodontic research or of significant contributions in endodontic education, clinical practice and/or to a professional organisation.

## **Recommendations concerning endodontic controversies**

In his speech, Dr Beat Suter focused on the current controversies in endodontics. According to Suter, the use of the dental dam, the features of an ideal root-canal preparation and the ideal root filling are undisputed. He referred to the literature for the most controversial points, but provided his own recommendations too:

- \_if possible, existing reconstructions should be retained for the time being;
- \_electronic determination of working length and use of patency technique;
- \_the diameter of the apical canal should be enlarged such that the irrigating solution can move freely;
- \_root canals should be prepared to the greatest possible apical taper;
- \_use of 2.5% NaOCl as irrigating solution;
- \_overfilling should be avoided; however, it is better to overfill than to underfill;

- use of  $\text{Ca}(\text{OH})_2$  as filler;
- single-visit root-canal treatment (RCT) is permitted;
- orthograde treatment is preferred; resection if orthograde treatment is not successful.

### Apical lesions

In his lecture, Dr Paul Dummer pointed out that correct canal preparation is a prerequisite for the healing of apical lesions and that the antibacterial effect of  $\text{Ca}(\text{OH})_2$  in the canal is rather limited. However, the patient's individual immune response apparently also has an influence on the long-term result of RCT. Studies have demonstrated that dentists—that is, their lack of expertise, lack of practice, impatience, poor risk management and poor professional conduct—are the primary reason for persistent lesions.

### SSE Student Prize and mini-workshops well received

Prior to the lunch break, three students from the universities of Basel, Bern and Zurich each presented a case and the panel awarded Noemi Kaderli the SSE Student Prize. For the first time, visitors were also able to try out different instruments in mini-workshops offered by various companies during the lunch break.

### New NiTi file systems in focus

Prof Zvi Metzger introduced the self-adjusting file (SAF) system. The SAF file is hollow and designed as a thin cylindrical NiTi lattice that adapts to the cross-section of the root canal. The file is moved up and down in the canal with high frequency and continuous rinsing. In the process, an equal amount of dentine is removed at virtually all canal walls so that a truly 3-D canal preparation takes place. Owing to the completely different geometry of the system, Metzger spoke of a paradigm shift and showed impressive  $\mu\text{CT}$  images that confirmed the system's efficiency. However, the price for one such file (single use!) is over €40, in addition to the costs for the system.

Following this lecture, Prof Pierre Machtou introduced the WaveOne system from DENTSPLY Maillefer. With WaveOne, the canal system is mechanically prepared with a single NiTi file, which is available in various sizes. The system's highlight is the file's reciprocating motion—it constantly changes its rotational direction in the canal.

Dr Eric Bonnet talked about MICRO-MEGA's Revo-S system. With this system, the canal is prepared with three mechanically rotating files. The asymmet-

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Fig. 4



Fig. 5

**Fig. 4**\_Dr Ramachandran Nair was awarded with the SSE's Guldener Prize 2012.

**Fig. 5**\_The SSE Executive Board (from left to right): Dr Denis Honegger, Dr Bernard Thilo, Dr Monika Marending Soltermann, Dr Birgit Lehnert, Dr Klaus Neuhaus, Prof Serge Bouillaguet, Dr Patrick Sequeira, Dr Reto Lauper and Dr Andreas Aebi.

ric cutting-edge geometry of the instrument is the system's secret. It ensures good cutting performance with less stress on the instrument and guarantees good removal of dentinal debris from the canal.

Finally, Dr Gilberto Debelian discussed the BioRaCe concept from Swiss manufacturer FKG. He demonstrated that bacterial penetration into the dentine is greater in the apical region than commonly assumed. That is the reason that a root canal should be prepared to at least ISO 35 or 40. He also explained the fracture characteristics (cyclic and torsional fatigue) of NiTi instruments comprehensively. Microcracks always form during rotary root-canal preparation, but considerably less with BioRaCe. He also briefly touched on a system still under development for the preparation of non-rotationally symmetrical canals.

### The search for the best obturation techniques

Prof Roland Weiger had the task of evaluating the best root-canal filling method. In principle, obturation is an important cornerstone of RCT, but not the decisive factor. In fact, the success of RCT depends on the quantity of bacteria remaining in the canal. He compared the various methods—lateral condensation, cold gutta-percha with central pin, Thermafil (DENTSPLY), vertical condensation, apical partial pin and GuttaFlow (Coltène/Whaledent)—with each other and came to the conclusion that each system is useful for different cases. Adhesive obturation materials did not prove to be of value. However, a (adhesive) tight coronal seal is an essential component of RCT.

### Possibilities and limitations

The second day of the conference began with a review of the last 40 years of endodontics. Prof Gunnar Bergenholtz reviewed what worked and what did not. For instance, short (but not too short) root fillings do not necessarily result in failure. Iatrogenic infections of the canal are to be avoided at all times. It has

been shown that apical lesions are better detected using digital volume tomography (DVT) than apical dental film; however, the known disadvantages—radiation dose, expensive equipment, over-interpretation, etc.—need to be taken into consideration. With regard to potential risks—obliterated canals, difficult canal geometry—Bergenholtz advised preparing an individual treatment plan while considering advantages and disadvantages, preparing canals as far as possible, avoiding producing artefacts (zipping, steps), and regularly observing the course of healing.

### Instrument history

In his second lecture, Prof Pierre Machtou gave an overview of the development of endodontic instruments over the past two decades. Milestones certainly were the crown-down, step-down and balanced force concepts, as well as the introduction of NiTi instruments in sequences of rotary systems. Owing to their high elasticity, NiTi hand instruments were not instantly successful. The added rotation made them effective.

### Regenerative medicine

Prof Antony Smith managed to bring practical relevance to his lecture on this rather dry and heavily scientific subject. In comparison with oral surgery, endodontists have already been very successful in regenerative medicine for over 100 years (tertiary dentine formation in pulp capping with  $\text{Ca}(\text{OH})_2$ ). EDTA apparently stimulates tertiary dentine formation similar to  $\text{Ca}(\text{OH})_2$ . Dentine contains many bioactive substances necessary for regeneration and science now has to find and activate these substances. Perhaps we will actually implant cells for regeneration in the future.

### Biofilm management

Prof Fouad Ashraf discussed a similar topic. He demonstrated the regenerative potency of the pulp with impressive images and reported about at-





Fig. 6



Fig. 7



Fig. 8

tempts to eliminate the biofilm developing in open canal lumen with new combinations of antibiotics (ciprofloxacin + metronidazole + minocycline). The well-known Augmentin (amoxicillin + clavulanic acid) or the newer tigecycline are other, very potent antibiotics. Irrigating solutions such as NaOCl and chlorhexidine have an antibacterial effect, but are potentially lethal for the stem cells important for regeneration. He resumed by mentioning the well-known and proven use of 17% EDTA as an alternative.

### Endodontic-periodontal lesions

In his lecture, Prof Andrea Mombelli discussed the issue of endo-perio lesions and their characteristics. In principle, the same (Gram-positive, usually anaerobic) bacteria (organised in a biofilm) always dominate the environment. Differences between extra- and intra-canal environments exist in the availability of oxygen and other crucial substances. The endodontic problem is to be approached therapeutically in the instance of a combined lesion.

### Vertical root fractures

Prof Claus Löst lectured about vertical root fractures. Although only slight incidence rates are described in the literature—between 1 and 5%—his personal research has revealed a much higher occurrence—up to 37%. The cause of this discrepancy, in his opinion, is for the most part very small fractures (mini-fissures) in the root, which are evidently not detected very often after extraction. He sought to explain the uncertain aetiology as possibly due to high loss of substance (owing to root-canal preparation), the actual root-filling method or its material (lateral condensation?), the materials utilised (sealer containing glass ionomer cement), irrigating solutions and fillers (NaOCl, Ca(OH)<sub>2</sub>) or the type of post-endodontic care (pin or no pin; crown). It is clear that such fractures can appear anywhere on the root, not only apically or cervically. Prior to a planned extraction, a vertical root fracture should always be ruled

out by means of explorative opening. Such fissures are also not (yet) identifiable by means of DVT.

### Ongoing conflict

In his lecture, Dr Jan Berghmans switched over to implantology. He questioned the statement of a well-known, American implantologist, who had said that, in general, an implant is a better choice for a prosthetic treatment than an endodontically treated tooth. Although Berghmans showed several—partially bizarre—X-ray images of teeth that had obviously not been treated *lege artis*, he was able to convince the audience that correctly treated root canals are less of a compromise than implants. Whereas implant-related problems are often merely considered complications, endodontic problems are immediately stigmatised as failures or mistakes. Berghmans recommends mounting of the cusp (primarily with premolars) after endodontic treatment. Whether the biological width will be sufficient for restoration after the treatment must repeatedly be examined. It must also be considered whether the existing hard tooth tissue permits a ferrule (1–2 mm high and 1 mm thick) and what the crown-to-root ratio will be after the restoration. He explained the higher fracture rate with the high loss of substance and associated debilitation. Investigations still have to demonstrate the extent to which poor proprioception has any relevance. In his opinion, the success rates of endodontic tooth restorations and single-tooth implants are easily comparable.

Following the final presentation, prizes—equipment and materials worth over 7,000 Swiss francs, courtesy of the exhibitors—were awarded by the SSE Executive Committee to members of the audience who had stayed until the very end.

Overall, it was once again a successful conference. The only downside was that the national conference of the Osteology Foundation was held in Zurich at the same time and many colleagues had to choose between the two events.

**Figs. 6–8** Various companies (from left to right: FKG, VDW and DENTSPLY Maillefer) offered mini-workshops during the lunch break.

*(Photos courtesy of Johannes Eschmann, DT Switzerland, and Dr Philipp Kujumdshiev.)*

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