Regenerative endodontics and composite as an all-rounder

European COLTENE Key Opinion Leader Meeting sheds light on the future of dental medicine

The St. Gallen football stadium is where various past matters of international importance have been settled. This November, the well-known sports facility became the venue for a summit meeting of European dental medicine. The Swiss dental specialist COLTENE invited respected opinion leaders and distinguished researchers to the Key Opinion Leader Meeting on its home territory. Over 80 renowned experts from research and practice spent two days discussing the future of endodontics and restorative dentistry. Among the participants were representatives of leading European universities and research laboratories, as well as numerous dentists who have made a name for themselves, also internationally, with their innovative treatment concepts and unusual patient cases. Specialists from countries including Germany, Finland, Greece, Great Britain, Italy, Norway, Switzerland, and the USA took part in numerous presentations and lively discussions.

The chameleon of restorative dentistry

Following a few words of introduction from COLTENE Managing Director Martin Schaufelberger, the first part of the congress focused on the creative use and advancement of composite as an all-rounder in restorative dentistry. To start the congress, the chairman, Prof. Ivo Krejci, Head of the Division of Cariology and Endontology, as well as President of the Ecole de Medicine Dentaire at the University of Geneva, presented his own concept developed for lifelong dental coaching. Minimal invasive treatment with direct and indirect adhesive techniques still represent one of the best alternatives for long-term patient restoration. ‘Thanks to growing life expectancy in Western Europe, there is an increasing demand for sustainable dental care and therapy, starting with the small child well into old age’, according to Krejci. In the second presentation section, the emphasis was on the current state of material research. Prof. Jorge Perdigão from the Department of Restorative Sciences at the University of Minnesota spoke about the latest approaches for improving dentine adhesion with the aid of adhesives. Also, Simon Sutter allowed the international guests exclusive insights into the latest innovations from COLTENE’s Research and Development department under the title ‘How can the gloss retention of composites be improved?’. Tips and special ideas on the use of composite veneering systems, such as the worldwide established COMPONEER treatment concept, were presented by dentists in private practice and aesthetic specialists Dr. George Gomes from Lisbon and Dr. Mario Besek from Zurich. Industrially prefabricated nano-hybrid composite shells offer the modern practitioner a wealth of options for anterior restoration, rectifying misalignment, diastema and tooth fracture through gap closure and classical caries therapy. Dr. Monik Vasant from London illuminated the fine art of highly aesthetic anterior restoration using the freehand technique using the MIRIS system, for a direct comparison with ceramic restorations. The programme was rounded off with an exciting outlook on the perspectives of new solutions in restorative dental medicine. The discussion covered the skilful exploitation of 3-D printing in dental medicine, the use of CAD/CAM-generated composite blocks as real alternatives for ceramic, as well as crowning of implants with composite and the use of composite cement for bridges. Prof. Mutlu Özcan from the University of Zurich concluded the round of presentations with her own spectacular cases, in which prosthetic freehand constructions composite were used, and the enormous potential of composite as an all-rounder became abundantly clear.

New approaches in endodontics

The second day of the congress dedicated to endodontics was no less lively. Under the motto ‘Pulp Fiction—beyond today’s limitation of Endodontic treatment’, the participants researched new ways of achieving regenerative orientation in the supreme discipline of conservative dentistry, leading away from the conventional, purely surgical approach. The congress chairmanship was shared by Prof. Dag Ørstavik, Head of the Department of Endodontics and the Postgraduate Programme at the University of Oslo, and Dr. Antonis Chaniotis who works at the University of Warwick and has his private practice in Athens. To start, Prof. Håvard Haugen from the University of...
Oslo explained the principles of morphogenesis and the special role of intrinsic disorder proteins (IDPs). The possibilities of developing a method for systematic regeneration of the dental pulp in the idea of tissue engineering was impressively illustrated by Dr Kerstin Galler from the University of Regensburg. The chairman Prof. Ørstavik himself demonstrated the basic principles and limitations in effective testing of dental materials. At the same time, he referred to the importance of clinical studies before using innovative materials in the clinical field. ‘Understanding biological processes must not mutate into an end in itself. Firstly it is important to define which objectives the investigations of new materials have and are then presented in the studies. At the end of the day, new treatment methods should also actually benefit the patient and be deployed intelligently’, Ørstavik strongly stressed. Konstantinos Simatos, who also travelled from Athens, offered creative enrichment. During the lunch break, all manner of percussion instruments were handed out in the lecture hall and the dedicated Greek managed to persuade the congress participants to work together as an orchestra for 40 minutes. A task that served for relaxation and evidently sounded like fun for all involved at the same time.

Dr Antonis Chaniotis had already complemented the insights from basic research with his experience from routine clinical work, and presented a series of long-term observations in the treatment of children in the regenerative part of the day’s programme. In his second contribution, he demonstrated why and how he came to use intelligent endodontic working aids, and how modular NiTi systems and endodontic aspirator tips significantly simplify obturation of a perfectly prepared canal for dentists today already. In the so-called ‘negative pressure technique’, fluid gutta-percha is transported in the temporarily sealed canal, even into the smallest lateral canals, through the skilled use of an aspirator tip. Mechanical preparation is still easiest with an almost unbreakable NiTi file. Taking the example of HyFlex CM and the new HyFlex EDM system, the endo expert demonstrated how high precision canal shaping can be achieved within a short time. As quoted by Dr Chaniotis on the current progress in the industry: ‘Thankfully we don’t have to wait for the future for high quality treatment and confident working! Nowhere is current technical development advancing so rapidly as in endontology.’

The eventful day was rounded off by Dr Barbara Müller, Head of the COLTENE Endo Business Unit. She introduced the upcoming new products, such as GuttaFlow bioseal and the Hyflex EDM files and illustrated that their special manufacturing process yielding a new generation of NiTi files, whereby the reduction in the number of files used is not at the expense of the quality of the endodontic treatment. The contribution was impressively complemented by Dr Ginaluca Fumei and Dr Thomas Rieger, who both presented cases from their practices, which were treated with Hyflex EDM.

_Important impetus for material research_

The host COLTENE was entirely satisfied with the results of the symposium and the ideas put forward by the various opinion leaders. The innovation-driven company will also consider the countless suggestions and ideas from the seminar within its own development work. The close cooperation with dentists from around the world and leading universities plays a crucial role in designing and shaping practical products. This is the only way of ensuring that clever working aids and dental materials optimally support dentists in their day-to-day therapeutic practice. Today’s visions from the dental specialists may then have already become common treatment in practice by the time of the next Key Opinion Leader Meeting.

The initial responses from the audience were also full of praise. For instance, Prof. Brian Millar from London and Dr Hagay Shemesh from the Netherlands emphasised the balanced mix between scientific and clinical contents. Participants such as Dr Michael Leski, Poland and Dr Sylvia Rahm, Germany, found the interdisciplinary presentations extremely enriching and also appreciated the perfect organisation of the event.