



# Vienna calling

experience **the** sound **of** Endodontology

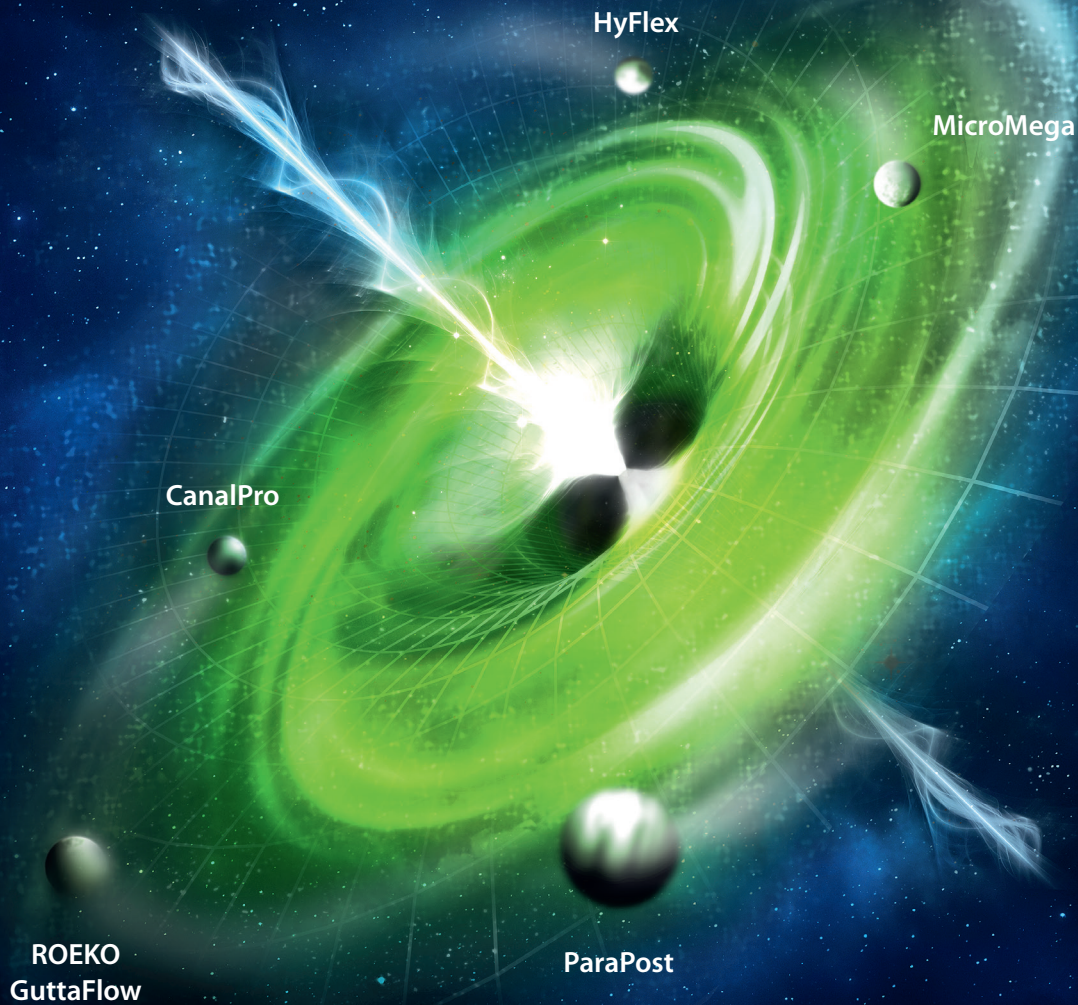
## PROGRAMME

**19<sup>th</sup> Biennial ESE Congress**  
Austria Center Vienna



# MASTERING "BLACK HOLES"

With Premium Endo-Brands



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**MicroMega®**

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**CanalPro™**

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**ParaPost®**

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## WELCOME LETTER

The Executive Board of the ESE along with the **Austrian Society for Endodontology (OEGEndo)** are delighted to welcome you to Vienna for this world-leading congress on Endodontology. ESE congresses are well known as exceptional meetings that combine the clinical science and practice of Endodontics with the underpinning biological and materials sciences.

ESE Vienna 2019 is taking place at the Austria Center Vienna from 12-14 September with pre-congress courses being held on 11th September. As you see, the congress centre is a modern, purpose-built venue that offers several large auditoria perfect for the scientific programme as well as a large exhibition space for sponsors and exhibitors.

The ESE and local organizing committee have worked hard on the congress, the theme of which is – “Vienna calling – experience the sound of Endodontology”. With the help of surveys conducted with previous congress participants, society members, and our industry partners we have organised an exciting scientific programme that will offer the latest clinical updates as well as the latest findings in the clinical sciences associated with Endodontology. The social programme is equally exciting with the Opening Ceremony and Welcome Reception on Wednesday evening, with the ESE reception on Thursday at the City Hall (Rathaus) and the River Cruise/Dinner on Friday.

The ESE wishes to acknowledge and thank the many companies who have so generously supported the Society and this congress. The scientific programme includes dedicated time for participants to visit the Exhibition Hall and meet with sponsors and exhibitors, so, please make time to visit the booths of our partners from the dental industry.

Finally, do not miss the opportunity to visit the city of Vienna, which is famous for its magnificent imperial heritage, music, culture, parks and exceptional cafes and restaurants.

We are confident ESE Vienna 2019 will be a memorable and enjoyable congress.



Professor Dag Ørstavik  
*Congress President and President of the ESE*

## COMMITTEES

### / ESE Executive Board

**President:** Dag Ørstavik

**President Elect and CEO:** Paul Dummer

**Treasurer:** Vittorio Franco

**Chair Education and Scholarship Committee:** John Whitworth

**Chair Research Committee:** Leo Tjäderhane

**Chair Clinical Practice Committee:** Gianluca Gambarini

**Chair Membership Committee:** Hal Duncan

**Administrator:** Sue Bryant

### / Local Organising Committee

#### **Congress Hosts:**

Johannes Klimscha, Matthias Holly

#### **Committee Members:**

Karl Schwaninger (ÖGEndo President)

Christof Pertl (ÖGEndo Vice-President)

Peter Brandstätter

Johannes Reichsthaler

Thielo Weeger

Mario Castro

### / Professional Congress Organiser:



#### **AIM Group International**

Lisbon Office

Avenida Conde de Valbom, 6 – 5th Floor, 1050-068 Lisbon, Portugal

**Phone:** +351 213245040

**E-mail:** [esevienna2019@aimgroup.eu](mailto:esevienna2019@aimgroup.eu)

## LOCAL INFORMATION

### / About Vienna

There are many good reasons to look around Vienna: the city is world famous for its magnificent imperial heritage, for example, the Schönbrunn Palace, the Belvedere Palace and the Hofburg Palace. Vienna is a centre for exceptional music and cultural programmes in concert halls, museums and on stage from the Golden Hall in the Musikverein to the renowned Kunsthistorische Museum (Museum of Art History) right up to the Vienna State Opera.

Vienna is also synonymous with a tradition of refined tasteful enjoyment, which has established itself over centuries in the coffee houses and wine taverns. Last but not least, over half of Vienna's urban area is made up of relaxing green spaces, parks and gardens, the Vienna Woods and the Danube Floodplains.

A walk through Vienna is like going on a journey through time to the imperial past. No wonder the historical city centre was named a world heritage site by UNESCO. Vienna boasts more than 27 castles and 163 palaces. On every corner you can discover valuable cultural artefacts or dream of the good old imperial period in a coffeehouse.

### / Language

German is spoken in Austria and the most commonly spoken foreign language is English.

### / Local Time

Vienna is in the Central European Time Zone (CET): GMT + 1 hour.

### / Currency

The local currency is the Euro (EUR).

ATM machines are found everywhere from where the local currency can be obtained.

Foreign currencies can be exchanged in banks and exchange offices.

### / Tipping

Tipping habits and amounts are pretty much the same in Vienna as elsewhere in major western cities. Normally add 5% to 15% to the bill so it's rounded up to a convenient number. Tip porters, taxi drivers, waiters and waitresses, hairdressers and anybody who fixes anything in your hotel/apartment.

### / Smoking

Smoking is not permitted inside trains, trams, buses and other forms of public transport. People are allowed to smoke outside. Smoking is not permitted inside the conference building.

### / Emergency contacts:

Emergency: 112

Fire service: 122

Police: 133

Ambulance: 144



## / Shopping and Business Hours

In general, shops are not allowed to open before 6 am or after 9 pm (weekdays) or after 6 pm (Saturdays). Shops must also close on Sundays and public holidays. Visitors from non-EU countries should ask for VAT refunds when purchasing goods.

## / VAT – Value Added Tax

Value Added Tax and similar taxes are charged on most goods and services in Austria. VAT in Austria is currently 20%. VAT is included in all Congress fees. As a participant in the ESE Vienna 2019 Congress you may have the possibility – under certain conditions – to recover the VAT paid on certain types of expenses incurred. This may apply to both non-European business travellers visiting Europe and to European business travellers to other EU countries. For further information, please contact Customs and Excise on departure at the airport.

## / Electricity

The typical mains voltage for households (as well as hotels) in Vienna is 230 volts (alternating current).

## / Telephone

The telephone prefix for calling Vienna from other countries is: + 43 1

## / Climate

Vienna has a mild continental climate. Even if the occasional winter day is icy and some days in high summer can bring sweltering heat to the palaces of the old city, most days of the year the weather matches the residents of the city: friendly, mild and moderate in every respect.

## / Visa Information

Delegates travelling to Vienna from outside the EU must ensure that they have the proper documentation before departure. Visa letters are available through the Congress Secretariat.

## CONGRESS GENERAL INFORMATION

### / CONGRESS VENUE

The 19th Biennial Congress of the European Society of Endodontology is taking place at the Austria Center Vienna (ACV).

#### Address:

Bruno-Kreisky-Platz 1,  
220 Vienna, Austria

### / Language

The official language of the congress is English. No simultaneous translation will be provided.

### / Congress Secretariat Opening Hours

<b>Wednesday</b>	11 September	08:00 – 20:00
<b>Thursday</b>	12 September	08:00 – 18:00
<b>Friday</b>	13 September	08:00 – 18:00
<b>Saturday</b>	14 September	08:00 – 16:00

### / Speakers Preview Room

<b>Wednesday</b>	11 September	14:00 – 18:30
<b>Thursday</b>	12 September	08:00 – 18:00
<b>Friday</b>	13 September	08:00 – 18:00
<b>Saturday</b>	14 September	08:00 – 16:00

### / Cloakroom

A cloakroom is available next to the Congress Secretariat area. Delegates must not leave their personal belongings at the venue after the closing-time.

### / Cloakroom Opening Hours

<b>Wednesday</b>	11 September	08:00 – 20:00
<b>Thursday</b>	12 September	08:00 – 18:00
<b>Friday</b>	13 September	08:00 – 18:00
<b>Saturday</b>	14 September	08:00 – 16:00

### / Exhibition Opening Hours

<b>Wednesday</b>	11 September	19:00 – 21:00
<b>Thursday</b>	12 September	08:30 – 18:00
<b>Friday</b>	13 September	08:30 – 18:00
<b>Saturday</b>	14 September	08:30 – 15:00

## / Congress Name Badge

Participants must wear their badges at all times.

## / ESE 2019 APP

Download the **ESE Meetings** app on your smartphone or portable devices from the App store or Google play to access all the congress information.

## / WI-FI

Wi-fi is available for all congress participants throughout the congress venue.

**Instructions:** Get connected with the ACV WIFI, open the browser and accept the T&C.

## / No smoking

Smoking is strictly forbidden in the congress Venue.

## / Mobile Phones

Delegates must keep their phone in the off or silent mode when attending lectures.

## / Photography and Video Recording

Delegates must not take photographs or make video recordings of lectures.

An official photographer will record both congress activities at the ACV and social functions on behalf of the ESE. These pictures may be used by the ESE to promote future activities. If you do not authorize the capture of your images, please advise the Secretariat onsite and inform the photographer at the time.

## / Refreshments

Complimentary coffees/refreshments will be available for participants in the breaks between the sessions (please check the congress timetable for the coffee break times).

## / Meals

Lunch boxes will be available for all delegates in the Trade Exhibition area with seating and tables provided in **Foyers E and F** (Level 0) and **Foyer D** (Level -2).

## / Insurance

The congress organizers cannot accept liability for personal injuries sustained or for loss or damage to property belonging to congress participants, either during or as a result of the congress. Please ensure you have valid personal insurance.



## SOCIAL PROGRAMME

### / Opening Ceremony and Welcome Reception

The Opening Ceremony will take place at 18:30 on Wednesday 11th September 2019 in Hall 1 (Floor -2) of the ACV. Please arrive at the ACV early to allow sufficient time for registration and for you to collect your participant badge that is essential for you to enter the building. Music will be provided by a quartet from the Vienna Philharmonic Orchestra.

The Welcome Reception will take place after the Opening Ceremony in the Exhibition Hall of the ACV from approximately 19:00 to 21:00. Entrance is subject to registration and display of the congress badge. The reception is free for participants. Accompanying persons can attend if they are registered and have paid the appropriate fee.

**Food and beverages:** complimentary drinks and finger food

### / ESE Reception

**Venue:** Rathaus Vienna City Hall (Festival Hall)

**Date/time:** Thursday 12th September 2019 from 19:30 – 23:30

**Food and beverages:** Complimentary drinks (for a specific period) and finger food

**Entertainment:** Jazz band, traditional dancers and famous Viennese characters

The City Hall is one of the most splendid amongst the numerous monumental buildings in Vienna. Designed by Friedrich Schmidt (1825-1891), it was erected between 1872 and 1883. The architecture of the Ringstraße is dominated by "Historicism", that is, a style that emphasizes the importance of history and is characterized by traditional forms and elements. In Historicism various stylistic elements of the past were combined into a style in its own right. Friedrich Schmidt however orientated himself just on one particular epoch or period. The City Hall was built in the Gothic style, with a tower similar to Gothic cathedrals. The Gothic era saw the growth of the cities and the emergence of an urban bourgeoisie.

Today the City Hall is the head office of Vienna's municipal administration. More than 2000 people work in the building. Visitors can see the magnificent appointments of the state rooms, which frequently provide an atmospheric backdrop to various events such as press conferences, concerts or balls.

### How to get to the City Hall:

**Address:**

Friedrich-Schmidt-Platz 1,  
1010 Vienna, Austria

*Please note: participants will need to find their own way there and back as transport is not provided.  
There is a metro station close to the venue which closes at midnight.  
Nearest station: Rathaus metro station Line U2.*

## / Congress dinner cruise

**Venue:** MS Admiral Tegetthoff

**Date/time:** Friday 13th September 2019 from 19:30 to 23:30

**Food and beverages:** Complimentary drinks (for a specific period) and extensive buffet

**Entertainment:** Jazz singer and accompanying band

In 1987 the Austrian shipyards launched the two boats MS Admiral Tegetthoff and MS Prinz Eugen, which are identical in construction. The MS Admiral Tegetthoff is the flagship of the DDSG Blue Danube Company and was completely refurbished in 2012. The art-nouveau style boat is believed to be the most famous charter boat and has been ploughing the waves of the Danube since 2001. For better manoeuvrability - mainly for mooring manoeuvres - the boat is equipped with an electrically driven bowthruster. Among other facilities are sonar, radar, and radiotelephone services to make for safe navigation.

### **Facilities:**

- Generous, partly covered sundeck;
- Equipment for those with a disability, including a lift to the upper deck;
- Washrooms.

## / How to get there

### **Departure meeting point:**

Pier no. 7 (DDSG Handelskai 265)

### **From the city centre - DDSG**

Underground U1 (red line), leave at Vorgartenstrasse – walk to Pier No. 7 (DDSG Handelskai 265)

There will be provided bus transfer at the end of the dinner to the city centre (Opera House)

## / Children (under 18 years old)

Delegates must be aware that the social events at the ESE congress are likely to be very crowded and will involve the availability of alcoholic drinks. In addition, the Welcome Reception will be held in the Trade Exhibition area where a considerable amount of valuable equipment will be on display. Delegates with children should take account of these circumstances should they wish to bring children to the social events on the Wednesday and Thursday.

As a result the ESE has developed the following policy for children:

- Children between 12 and 18 years may attend the Welcome Reception on Wednesday, ESE Reception on Thursday and Gala Dinner BUT are required to be registered as accompanying persons and pay the appropriate fee.
- Children under the age of 12 years may attend the Welcome Reception on the Wednesday and the ESE Reception on Thursday on the understanding that the venues will be crowded.

**Please note:** tickets purchased for the ESE Reception and the Dinner Cruise cannot be returned once purchased; however, you can pass them on to friends if you cannot attend. Also, if tickets were not purchased during online registration they will only be available onsite from the onsite registration desk (subject to availability).

## MEETINGS & FUNCTIONS *(invitation only)*

### / ESE General Assembly

Wednesday, 11th September, from 10:00 to 18:00 - Hall N2, Level 1

### / ESE Individual Members Lunch

Thursday, 12th September, from 12:30 to 13:30 – room L6, Level 1

### / ESE Registered Postgraduate Student Members Lunch

Friday, 13th September, from 12:30 to 13:30 – room L6, Level 1

# BioRoot™ RCS

Root Canal Sealer

## High seal, and much more

OBTURATION  
INNOVATION



We know that failure of a root canal treatment can have severe consequences for you and your patients.

With BioRoot™ RCS, move to a new generation of mineral obturation offering you an innovative combination of features:

- High Seal
- Antimicrobial properties
- Promotes peri-apical healing
- Easy obturations and follow-up

**BioRoot™ RCS. Succeed.**

ACTIVE  
BIOSILICATE  
TECHNOLOGY

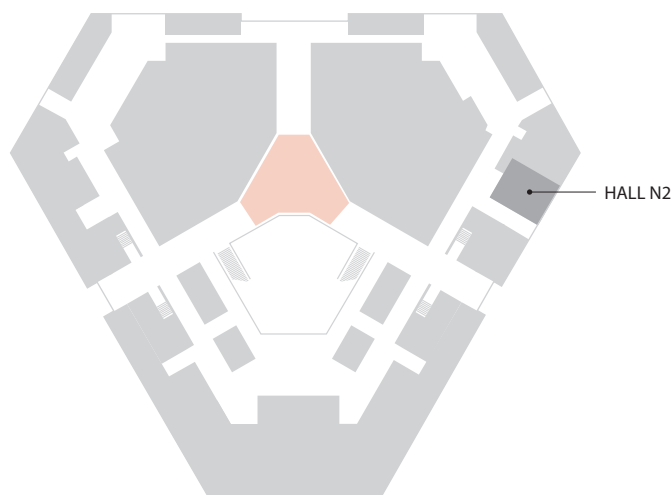




## CONGRESS VENUE FLOORPLAN

WEDNESDAY

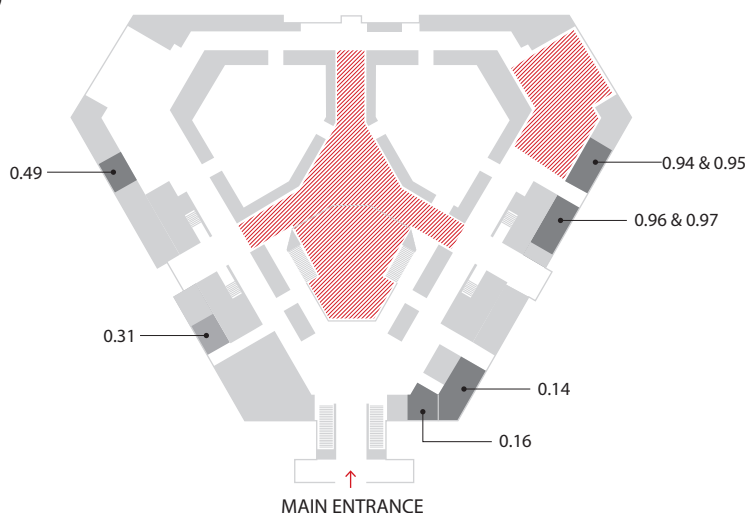
### / LEVEL 1



HALL N2 / ESE general Assembly

REGISTRATION AREA  
AND CLOAKROOM

### / LEVEL 0



**0.14** / ESE Pre-congress course: Optimized flap design and advanced suturing techniques in Endodontic Microsurgery

**0.16** / ESE Pre-congress symposium: Current advances and controversies in tooth, root and canal anatomy

**0.31** / Speakers Preview Room

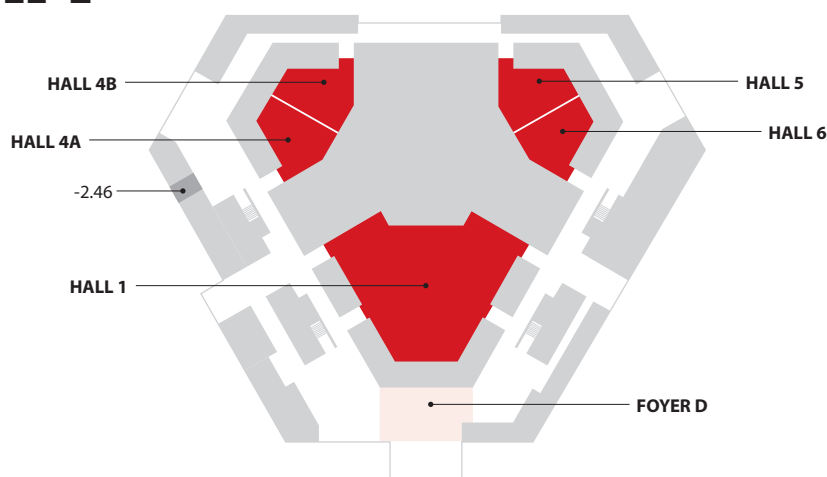
**0.49** / Pre-congress course - FKG: Moving forward to a new era in root canal therapy: Adaptive techniques for conservative treatment and retreatment

**0.94 & 0.95** / Pre-congress course - Fotona: Laser activated SWEEPS® irrigation

**0.96 & 0.97** / Pre-congress course - Eighteenth Medical: Real World Techniques for instrumentation and obturation

EXHIBITION AREA  
Welcome Reception

### / LEVEL -2



**HALL 1** / Opening Ceremony

**HALL 4A** / ESE Pre-congress symposium: Revitalization

**HALL 4B** / ESE Pre-congress symposium: Current management of traumatic dental injuries

**HALL 5** / ESE Pre-congress symposium: Designing and running Randomised Control Trials and laboratory research projects

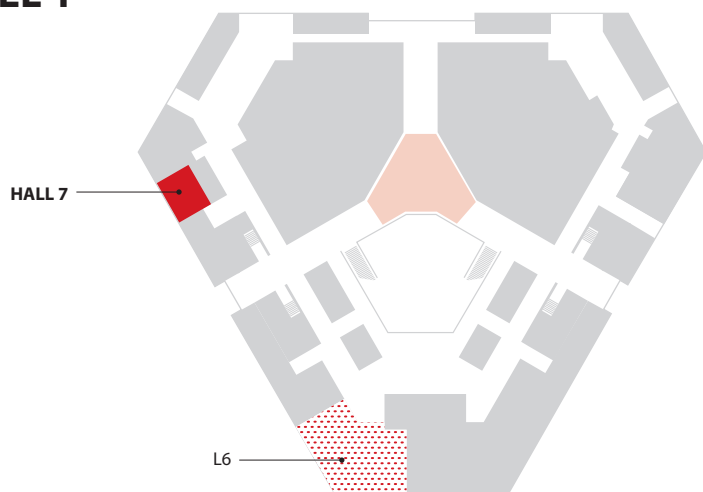
**HALL 6** / ESE pre-congress symposium: New Orofacial Pain Classification ICOP-1 beta – What's in it for the endodontists?

**FOYER D** / LUNCH AREA

**-2.46** / Childcare

## THURSDAY, FRIDAY, SATURDAY

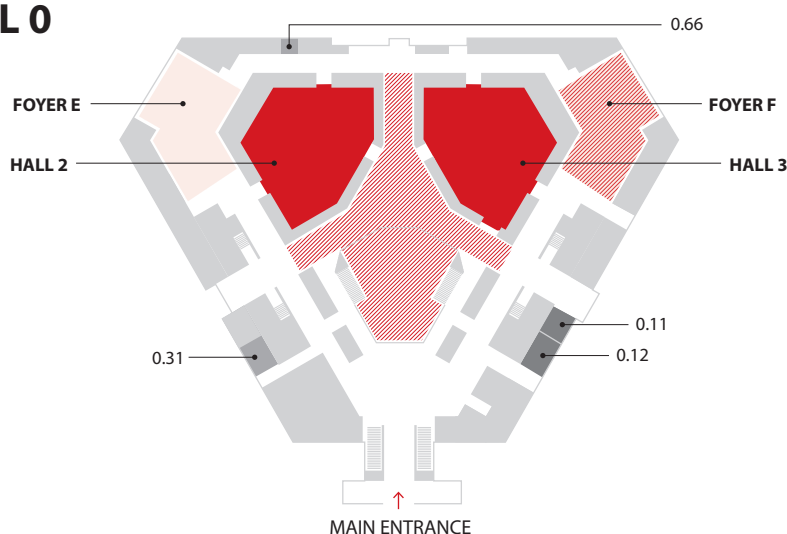
### / LEVEL 1



**HALL 7** / Oral presentations  
**L6** / Individual Members Lunch & Postgraduate Members Lunch

**REGISTRATION AREA AND CLOAKROOM**

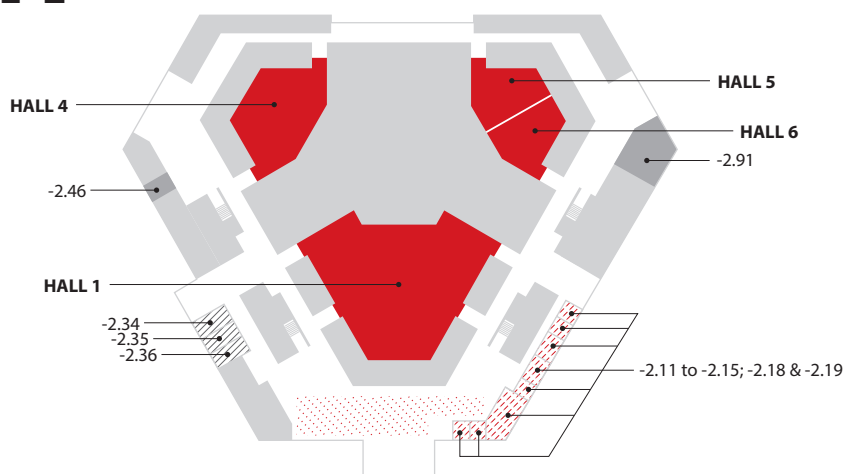
### / LEVEL 0



**0.11** / Main Sponsor Room (Coltène / Micro Mega)  
**0.12** / Gold Sponsor Room (Dentsply Sirona)  
**0.31** / Speakers Preview Room  
**0.66** / Quiet Room  
**FOYER E** / LUNCH AREA  
**FOYER F** / LUNCH AREA

**EXHIBITION AREA**

### / LEVEL -2



**-2.11 to -2.15; -2.18 & -2.19** / Original Scientific Posters  
**-2.91** / Speakers Lounge (only for invited speakers on the main programme)  
**-2.34, -2.35, -2.36** / Clinical E-posters  
**-2.46** / Childcare

**GENERAL ENDODONTIC POSTERS**

## TIMETABLE PRE CONGRESS COURSES

### Wednesday, 11th September

TIME	HALL 4A	HALL 4B	HALL 5	HALL 6	MEETING ROOM 0.16
	14:00 -17:30 / ESE Pre-congress symposium: Revitalization	14:00 -18:00 / ESE pre-congress symposium: Current management of traumatic dental injuries	14:00 -18:00 / ESE Pre-congress symposium: Designing and running Randomised Control Trials and laboratory research projects	14:00 -18:00 / ESE pre-congress symposium: New Orofacial Pain Classification ICOP-1 beta – What's in it for the endodontists?	14:00 -18:00 / ESE Pre-congress symposium: Current advances and controversies in tooth, root and canal anatomy
18:30 - 19:00	Opening Ceremony				> HALL 1 (Level -2)
19:00 - 21:00	Welcome Reception				> Exhibition Hall (Level 0)



TIME	MEETING ROOM 0.14	MEETING ROOM 0.94 & 0.95	MEETING ROOM 0.96 & 0.97	MEETING ROOM 0.49
	13:00 -17:00 / ESE Pre-congress course: Optimized flap design and advanced suturing techniques in Endodontic Microsurgery	15:00 -18:00 / Pre-congress course: Fotona: Laser activated SWEEPS® irrigation	13:00-17:00 / Pre-congress course: Eighteeth Medical: Real World Techniques for instrumentation and obturation	08:30-16:30 / Pre-congress course: FKG: Moving forward to a new era in root canal therapy: Adaptive techniques for conservative treatment and retreatment
18:30 - 19:00	Opening Ceremony			> HALL 1 (Level -2)
19:00 - 21:00	Welcome Reception			> Exhibition Hall (Level 0)

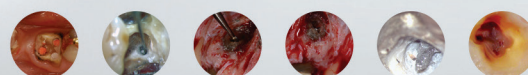
From Eye to Insight

**Leica**  
MICROSYSTEMS



Shadow-free illumination even in deep cavities for:

- > Easy location of additional root canals
- > Accurate visualization of complex pulp structures
- > Precise management of obstruction or perforation in root canals
- > Controlled root filling



## SUPPORT YOUR ENDODONTICS DIAGNOSIS & TREATMENT TODAY AND TOMORROW

The M320 Dental Microscope

**We are looking forward to seeing you at our booth no. 5-6 in the exhibition area.**

## TIMETABLE CONGRESS

### Thursday, 12th September

TIME	HALL 1	HALL 2	HALL 3	HALL 4
	<b>09:45 - 10:30 / Endodontics - towards the future</b> <i>Markus Haapasalo</i>	<b>09:45 - 10:30 / Intentional replantation and autotransplantation</b> Interdisciplinary management of the legacy of complex trauma in children and adolescents <i>Monty Duggal</i>	<b>09:00 - 12:30 / Symposium: Micro- and nano-CT in endodontic research</b> <b>09:00 - 09:05 / Introduction Micro- and nano-CT in endodontic research</b> <i>Dag Ørstavik</i> <b>09:05 - 09:40 / Fundamental aspects of micro and nano-CT applied to biological tissues</b> <i>Liebert Parreiras Nogueira</i> <b>09:40 - 10:20 / Micro and nano-CT applied to dental research</b> <i>Håvard Jostein Haugen</i> <b>10:20 - 10:30 / Discussion</b>	
10:30 - 11:00	<b>Coffee Break</b>			
	<b>11:00 - 11:45 / The future - the relationship between Endodontics and Restorative Dentistry</b> <i>Peter Briggs</i> <b>11:45 - 12:30 / The future - the prevalence of pulp and periapical diseases</b> <i>Lise-Lotte Kirkevang</i>	<b>11:00 - 11:45 / Herpesviruses as putative pathogens in endodontic diseases</b> <i>Aleksandar Jakovljevi</i> <b>11:45 - 12:30 / Persistent orofacial pain and endodontics: pre-op and post-op considerations</b> <i>Justin Durham</i>	<b>11:00 - 11:40 / Morphometric tooth analysis by micro-CT</b> <i>Gaute Floer Johnsen</i> <b>11:40 - 12:20 / Applications of nano-CT in endodontic research</b> <i>Pia Sundé</i> <b>12:20 - 12:30 / Discussion</b>	<b>11:00 - 11:45 / Eighteenth Medical lecture 1</b> <b>20 Tips to improve Root Canals Preparation and Obturation</b> <i>Mohammad Hammo</i> <b>11:45 - 12:30 / Coltène / Micro Mega lecture 1</b> Heat treatment & single file, why make that choice? <i>Tara Mc Mahon</i>
12:30 - 13:30	<b>Lunch Break</b>			
13:30 - 14:30	<b>Poster Presentations/Trade Exhibition</b>			
	<b>14:30 - 15:15 / The future - the impact of CBCT imaging on endodontic treatment planning</b> <i>Rubens Spin-Neto</i> <b>15:15 - 16:00 / The future - endodontic microbiology</b> <i>Luis Chavez de Paz</i>	<b>14:30 - 18:00 / Symposium: External cervical tooth resorption</b> <b>14:35 - 15:10 / Aetiology and potential predisposing factors</b> <i>Federico Foschi</i> <b>15:10 - 15:45 / Pathogenesis and histology of External Cervical Resorption</b> <i>Athina-Maria Mavridou</i> <b>15:45 - 16:00 / Discussion</b>	<b>14:30 - 18:00 / Symposium: The impact of tooth anatomy on intracanal procedures</b> <b>14:30 - 15:10 / Managing the complex anatomy of single rooted teeth: mandibular premolars and dens invaginatus</b> <i>Sashi Nallapati</i> <b>15:10 - 16:00 / Managing the complex anatomy of posterior teeth: surgical and non-surgical approaches</b> <i>Stephen Niemczyk</i>	<b>14:30 - 15:15 / Fotona lecture SWEEPS®: the evolution of bubbles</b> <i>Giovanni Olivi</i> <b>15:15 - 16:00 / Angelus lecture</b> The past, the present and the future of Bioceramics in Endodontics <i>Leandro Pereira</i>
16:00 - 16:30	<b>Coffee Break</b>			
	<b>16:30 - 17:15 / The future - access cavity design</b> Rational approach and future perspectives on access cavity designs <i>Antonis Chaniotis</i> <b>17:15 - 18:00 / The future - working length estimation and control how to make it easy</b> <i>Vittorio Franco</i>	<b>16:30 - 17:20 / Diagnosis and management of external cervical tooth resorption</b> <i>Shanon Patel</i> <b>17:20 - 18:00 / Discussion</b>	<b>16:30 - 17:30 / Root canal anatomy: The truth is in the details</b> <i>Ronald Ordinola Zapata;</i> <i>Marco Versiani</i> <b>17:30 - 18:00 / Discussion</b>	<b>16:30 - 17:15 / Dentsply Sirona lecture TruNatomy: A Restoratively Driven Path to Endodontic Excellence</b> <i>Ove Peters</i> <b>17:15 - 18:00 / Woodpecker lecture 1</b> How to perform better endodontics with ultrasonics <i>Walid Nehme</i>

TIME	HALL 5	HALL 6	HALL 7
09:00 - 10:30	<b>ESE Wladimir Adlivankine Research Prize presentations</b> / Comparison of continuous wave obturation and cold lateral condensation techniques in C1 and C2-type canals of 3D printed resin teeth instrumented with Reciproc Blue or Hyflex EDM <i>*Karatekin AO, Keles A, Gençoglu N</i> / TGF-β1 levels and distribution in the root dentine of mature and immature human premolars <i>*Ivica A, Deari S, Patcas R, Weber FE, Zehnder M</i> / Influence of model system parameters on the sodium hypochlorite susceptibility of endodontic biofilms <i>*Swimberghe RCD, Crabbé A, Braeckmans K, De Moor RJG, Coenye T, Meire MA</i> <b>Original Scientific Poster Prize - oral presentations</b> / Anesthetic Efficacy of 2% Mepivacaine versus 4% Articaine for Inferior Alveolar Nerve Blocks in Patients with Symptomatic Irreversible Pulpitis in Mandibular Molars: A Randomized Clinical Trial <i>EL Marakby MF, Fouda MY, *Bedier MM</i> / The influences of Type 2 Diabetes on clinically normal dental pulp tissues <i>*AlSamahi S, Milne TJ, Rich AM, Hussaini HM, Friedlander LT</i>	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
10:30 - 11:00	<b>Coffee Break</b>		
11:00 - 12:30	<b>Original Scientific Poster Prize - oral presentations</b> / Effect of Premedication Using Diclofenac Potassium on Anesthetic Success of Articaine Buccal Infiltration in Mandibular Molars with Symptomatic Irreversible Pulpitis: A Randomized Placebo-Controlled Trial <i>Al-Rawhani AH, Wanees Amin SA, *Gawdat SI</i> / Calibration for increased reliability in assessment of endodontic variables in panoramic radiographs <i>*Sebring D, Jonasson P, Kvist T, Buhlin K, Lund H</i> / Assessment of used outcome measures in high-ranked endodontic journals according to a hierarchical model <i>*Almutairi N, Björkner AE, Fransson H</i> <b>Education Prize - oral presentations</b> / Evaluation of 3D printed resin bicuspid in the reproduction of root canal anastomoses <i>*Habib M, Nehme W, Zogheib C, Maalouf L, Tohme H, Naaman A</i> / Suitability of different tooth replicas for endodontic training: perceptions and detection of common errors in the performance of postgraduate students <i>*Gancedo-Caravia L, Bascones J, Garcia-Barbero E, Arias A</i>	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
12:30 - 13:30	<b>Lunch Break</b>		
13:30 - 14:30	<b>Poster Presentations/Trade Exhibition</b>		
14:30 - 16:00	<b>Clinical Poster Prize - oral presentations</b> / Guided endodontic treatment of multiple teeth with dentin dysplasia: a case report <i>*Krug R, Volland J, Reich S, Soliman S, Connert T, Krastl G</i> / Oehler's Type III Dens Invaginatus Case Report <i>*Raad I, Tello G, Marin A, Cholic P</i> / Internal repair of External Cervical Resorption: a case report <i>*Liapis D, Meire MA, De Moor RJG, De Bruyne MAA</i> / Conservative management of large periapical lesion associated with mature and immature permanent teeth using conventional and regenerative endodontic procedures: a case report <i>*Abo ElSeoud MR</i> / Improved navigation system for endodontic surgery <i>*Morese A, Seracchiani M, Stefanelli L, De Angelis F, Di Carlo S, Gambarini G</i>	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
16:00 - 16:30	<b>Coffee Break</b>		
16:30 - 18:00	<b>Clinical Video Prize - oral presentations</b> / Broken files removal - case report <i>*Jankowska A, Kuzminski M, Boltacz-Rzepkowska E</i> / Intentional Replantation <i>*Martinez Cuellar NG</i> / Next Generation Endodontics; Revitalization by CGF <i>*Ertürk E, Fazeli R, Turk T</i> / Apical surgery on upper left first molar with sinus elevation <i>*Cho S, Nam J</i> / The use of PRF in endodontic microsurgery <i>*Pires M, Cordeiro J, Meirinhos J, Rito Pereira M, Ginjeira A</i> / Volumetric 3D Rendering: Diagnosis and treatment planning <i>*Isufi A, Dauti R, Plotino G, Terauchi Y</i> / Guided endodontics: Virtual endodontic access planning using two different workflows <i>*Reich S</i> / Intentional replantation with an atraumatic extraction system in teeth with extensive cervical root resorption <i>*Krug R, Krastl G</i> / New tips to remove fiber post <i>*Choukroun R, Couvrechel C, Jakubowicz-Kohen B, Bocau C</i> / A new endodontic Navigation system: an endodontic surgery <i>*Morese A, Seracchiani M, Stefanelli L, Di Carlo S, Testarelli L, Gambarini G</i> / A novel guided endodontics method for the treatment of a maxillary premolar with pulp canal obliteration and apical periodontitis <i>*Torres A</i> / Management of a perforation of the lateral incisor, due to an external resorption caused by canine impaction <i>*Ferraro N, Poli F</i> / Managing a calcified pulp chamber aided by ultrasonics and high resolution CBCT <i>*Shehabeldin I</i>	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects

## TIMETABLE CONGRESS

### Friday, 13th September

TIME	HALL 1	HALL 2	HALL 3	HALL 4
	<p><b>08:45 / Prize presentations:</b> the winners of the following prizes will be presented with a certificate: ESE Wladimir Adlivankine Research, Education, Original Scientific Poster, Clinical Poster and Clinical Video</p> <p><b>09:00 - 09:45 / The future - irrigants and irrigant agitation</b> <i>Christos Boutsoukis</i></p> <p><b>09:45 - 10:30 / The future - supplementary methods of eliminating bacteria from root canals</b> <i>Anil Kishen</i></p>	<p><b>09:00 - 09:45 / New system for classifying tooth, root and canal morphology</b> <i>Hany Mohamed Aly Ahmed</i></p> <p><b>09:45 - 10:30 / The root apex - the complexities of apical canal anatomy</b> <i>Ashraf Elayouti</i></p>	<p><b>09:00 - 12:30 / Symposium: Deep carious lesions and vital pulp therapies</b></p> <p><b>09:00 - 09:35 / Caries today: challenges, opportunities and the reparative response</b> <i>Hal Duncan</i></p> <p><b>09:35 - 09:45 / Discussion and questions</b></p> <p><b>09:45 - 10:20 / The diagnostic conundrum of treating the deep carious lesion</b> <i>Phillip Tomson</i></p> <p><b>10:20 - 10:30 / Discussion and questions</b></p>	<p><b>09:45 - 10:30 / Carestream Dental lecture</b></p> <p><b>CBCT in endodontics. Why and when?</b> <i>Roberto Carlos Aza Garcia</i></p>
10:30 - 11:00	<b>Coffee Break</b>			
	<p><b>11:00 - 11:45 / The future - root canal shaping</b> <i>Tina Rödig</i></p> <p><b>11:45 - 12:30 / The future - the optimum dimensions of the apical preparation</b> <i>Jose Siqueira Jr</i></p>	<p><b>11:00 - 11:45 / The association of clinical signs and symptoms with specific endodontic microorganisms</b> <i>Brenda P Gomes</i></p> <p><b>11:45 - 12:30 / Pulp revitalization procedures in immature and mature teeth</b> <i>Tugba Turk</i></p>	<p><b>11:00 - 11:35 / How much is enough when treating the deep carious lesion?</b> <i>Lars Bjørndal</i></p> <p><b>11:35 - 11:45 / Discussion and questions</b></p> <p><b>11:45 - 12:20 / Managing the vital pulp when treating the deep carious lesion</b> <i>Stéphane Simon</i></p> <p><b>12:20 - 12:30 / Discussion and questions</b></p>	<p><b>11:00 - 11:45 / VDW lecture</b></p> <p><b>How to scout unscoutable canals predictably and efficiently</b> <i>Gianluca Plotino; Nicola Maria Grande</i></p> <p><b>11:45 - 12:30 / Coltène / Micro Mega lecture 2</b></p> <p><b>A new approach for the instrumentation of challenging canal systems. A dedicated sequence for a dedicated technique</b> <i>Antonis Chaniotis</i></p>
12:30 - 13:30	<b>Lunch Break</b>			
13:30 - 14:30	<b>Poster Presentations/Trade Exhibition</b>			
	<p><b>14:30 - 15:15 / The future - NiTi alloys</b> <i>David Sonntag</i></p> <p><b>15:15 - 16:00 / The future - multiple or single cone canal filling</b> <i>Franklin Tay</i></p>	<p><b>14:30 - 15:15 / Working length determination: dynamic and three-dimensional</b> <i>Lucila Piasecki</i></p> <p><b>15:15 - 16:00 / Endodontic screening for patients with cardiovascular disease: presentation of a consensus protocol</b> <i>Elisabetta Cotti</i></p>	<p><b>14:30 - 18:00 / Symposium: Education</b></p> <p><b>14:30 - 15:15 / How to produce high quality videos for online teaching and technology enhanced learning</b> <i>Mads Dahl</i></p> <p><b>15:15 - 16:00 / The transition to independent practice. How can dental education ameliorate the transition shock?</b> <i>Peter Musaeus</i></p>	<p><b>14:30 - 15:15 / Eighteenth Medical lecture 2</b></p> <p><b>3-D obturation of root canal systems. Does it really matter?</b> <i>Massimo Giovarruscio</i></p> <p><b>15:15 - 16:00 / Edge Endo lecture</b></p> <p><b>Clinical management of 3D complex curvatures</b> <i>Gianluca Gambarini</i></p>
16:00 - 16:30	<b>Coffee Break</b>			
	<p><b>16:30 - 17:15 / The future - hydraulic calcium silicate cements</b> <i>Josette Camilleri</i></p> <p><b>17:15 - 18:00 / The future - assessing residual tooth tissue for restoration</b></p> <p><b>The relationship between endodontic treatment need, tooth restorability, endodontic outcome and tooth survival</b> <i>Francesco Mannocci</i></p>	<p><b>16:30 - 17:15 / Treatment planning for post-treatment disease</b> <i>Hani F. Ounsi</i></p> <p><b>17:15 - 18:00 / Tips and tricks during root canal retreatment</b> <i>Mohammad Hammo</i></p>	<p><b>16:30 - 17:00 / The Development of the Endodontics Complexity Assessment Tool (E-CAT) - A case-difficulty assessment app for endodontic education.</b> <i>Obyda Essam</i></p> <p><b>17:00 - 17:30 / Digital workflow in endodontic skills training 3D printing in dental education</b> <i>Marcel Reymus</i></p> <p><b>17:30 - 18:00 / ESE education workstreams - how you could get involved and ESE education grants - how could we do better?</b> <i>John Whitworth</i></p>	<p><b>16:30 - 17:15 / Septodont lecture</b></p> <p><b>Calcium silicate-based sealer - a new "must-have" in endodontics?</b> <i>Till Dammaschke</i></p> <p><b>17:15 - 18:00 / Woodpecker lecture 2</b></p>

TIME	HALL 5	HALL 6	HALL 7
09:00 - 10:30	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
10:30 - 11:00	Coffee Break		
11:00 - 12:30	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
12:30 - 13:30	Lunch Break		
13:30 - 14:30	Poster Presentations/Trade Exhibition		
14:30 - 16:00	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
16:00 - 16:30	Coffee Break		
16:30 - 18:00	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects



## TIMETABLE CONGRESS

### Saturday, 14th September

TIME	HALL 1	HALL 2	HALL 3	HALL 4
	<p>09:00 - 09:45 / The future - endodontic surgery <i>Silvio Taschieri</i></p> <p>09:45 - 10:30 / The future - the survival of endodontically treated teeth <i>Helena Fransson</i></p>	<p>09:00 - 09:45 / Management of iatrogenic errors by non-surgical and surgical retreatment <i>Frank Setzer</i></p> <p>09:45 - 10:30 / Non-surgical retreatment of teeth with persisting apical periodontitis following apicoectomy <i>Michael Hülsmann</i></p>	<p>09:00 - 12:30 / Symposium: Endodontics and systemic health</p> <p>09:00 - 09:15 / Introduction: Endodontics and systemic health <i>Luc van der Sluis</i></p> <p>09:15 - 10:00 / The oral - general health connection. Association or causation? Scientific and ethical challenges <i>Bjørn Hofmann</i></p> <p>10:00 - 10:15 / Do root fillings and apical periodontitis increase the risk of a first myocardial infarction? <i>Thomas Kvist</i></p> <p>10:15 - 10:30 / Endodontic infections, inflammation, and coronary artery disease. <i>Pirkko Pussinen</i></p>	<p>09:00 - 10:30 / Oral presentations on freely chosen subjects</p>
10:30 - 11:00	Coffee Break			
	<p>11:00 - 11:45 / The future - removing and bypassing fractured instruments tips and tricks to solve the problem <i>Augusto Malentacca</i></p> <p>11:45 - 12:30 / The future - treating the calcified pulp chamber and canal <i>Helmut Walsch</i></p>	<p>11:00 - 11:45 / Retrograde root canal treatment <i>Peter Jonasson</i></p> <p>11:45 - 12:30 / How to restore broken down root filled teeth <i>Simone Grandini</i></p>	<p>11:00 - 11:20 / The influence of apical periodontitis on the concentration of inflammatory mediators in peripheral blood plasma <i>Suzette van der Waal</i></p> <p>11:20 - 11:45 / How healing of Apical Periodontitis is influenced by the health of the patients and their genetic background <i>Elisabetta Cotti</i></p> <p>11:45 - 12:00 / Apical periodontitis and diabetes - an update Association does not always imply causation <i>Juan José Segura-Egea</i></p> <p>12:00 - 12:30 / Discussion</p>	<p>10:30 - 12:30 / Oral presentations on freely chosen subjects</p>
12:30 - 13:30	Lunch Break			
13:30 - 14:30	Poster Presentations/Trade Exhibition			
	<p>14:30 - 15:15 / The future - early clinical diagnosis and biomechanics of vertical root fractures <i>Zvi Metzger</i></p> <p>15:15 - 16:00 / The future - quality of life and Endodontics <i>Prasanna Neelakantan</i></p>	<p>14:30 - 15:15 / Endodontic disinfection in a world of surrogates <i>Erick Souza</i></p> <p>15:15 - 16:00 / Caries or pre-eruptive resorption? - a challenging differential diagnosis with clinical consequences <i>Beat Suter</i></p>	<p>14:30 - 16:00 / Symposium: Digital endodontics</p> <p>14:30 - 14:50 / 3D models for teaching and research in Endodontics <i>Lucila Piasecki</i></p> <p>14:50 - 15:10 / Endodontic Guides and 3D Printing. <i>P. Sebastian Ortolani Seltenerich</i></p> <p>15:10 - 15:30 / 3D assessment of canal complexities with new endodontic software 3d case assessment <i>Gianluca Gambarini</i></p> <p>15:30 - 15:50 / Digital solutions for post-endodontic restorations How CAD/CAM techniques will change your endodontic life <i>Massimo Gagliani</i></p> <p>15:50 - 16:00 / Discussion</p>	<p>14:30 - 16:00 / Oral presentations on freely chosen subjects</p>

TIME	HALL 5	HALL 6	HALL 7
09:00 - 10:30	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
10:30 - 11:00	Coffee Break		
11:00 - 12:30	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects
12:30 - 13:30	Lunch Break		
13:30 - 14:30	Poster Presentations/Trade Exhibition		
14:30 - 16:00	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects	Oral presentations on freely chosen subjects

## PRE-CONGRESS COURSES

### / HALL 4A

14:00 – 17:30 /

#### **ESE Pre-congress symposium: Revitalization**

*Led by Kerstin Galler*

##### **Overview**

Revitalization is an established treatment alternative to MTA-apexification in immature teeth with pulp necrosis. As evidence from in vitro and in vivo studies, from case reports, case series and clinical studies is accumulating, we are able to better understand tissue responses and the prognosis of teeth treated with revitalization. This symposium will provide an up-to-date assessment of revitalization procedures, including indications, treatment protocols, prognosis and expected tissue responses.

##### **Aims**

After this symposium, endodontists should know the procedure, be able to decide whether it is indicated, perform it and know potential outcomes.

##### **Objectives**

- To provide the procedural details of the clinical protocol;
- To discuss outcomes, and be aware of pitfalls;
- To make attendees understand the biological, physiological and pathological reactions to the treatment;
- To improve the knowledge of attendees on the biomaterials used in the context of revitalization.

##### **Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/revitalization>

14:00 – 14:15 /

#### **Introduction**

*Kerstin Galler*



I declare that I have NO proprietary, financial, or other personal interest of any nature or kind in any product, service, course, and/or company, or in any firm beneficially associated therewith, that will be discussed or considered during the proposed presentation.

14:15 – 15:00 /

#### **Revitalization - Indications, Treatments and Outcomes**

*Stéphane Simon*



I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation - Dentsply Sirona, Septodont, Produits Dentaire SA.

15:00 – 15:30 /

## Revitalization and Disinfection

*Ralf Schlichting*



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15:30 – 16:00 / **COFFEE BREAK**

16:00 – 16:30 /

## Revitalization and Tissue Responses Biological and Biomechanical Aspects

*Matthias Widbiller*



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16:30 – 17:10 /

## Revitalization and Biomaterials

*Josette Camilleri*



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17:10 – 17:30 /

## Cases and Discussion

*Kerstin Galler*



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17:30 / **SESSION ENDS**

## / HALL 4B

14:00 – 18:00 /

### ESE Pre-congress symposium: Current management of traumatic dental injuries

Led by Gabriel Krastl

#### Overview

The Dental Trauma Symposium will focus on current concepts for the management of traumatic dental injuries.

#### The key aims are to:

- Increase the awareness of the pathological parameters that impact on the regeneration of the pulp and the PDL;
- Discuss the current strategies to prevent root resorption after severe traumatic dental injuries;
- Demonstrate the current approaches to the treatment of teeth with deep subgingival fractures;
- Give an overview of the injuries in the primary dentition and their effects on the permanent successors.

#### Further information can be found on the ESE website at:

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/trauma>

14:00 – 14:45 /

### Treating subgingival fractures

Gabriel Krastl



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14:45 – 15:30 /

### Treating the traumatized pulp

Roland Weiger



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15:30 – 16:00 / **COFFE BREAK**

16:00 – 16:45 /

### Treating the traumatized periodontium

Kurt Alois Ebeleseder



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16:45 – 17:30 /

## Treating the traumatized primary dentition Trauma and Toddlers

Anne O'Connell



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17:30 /

Discussion

18:00 / SESSION ENDS

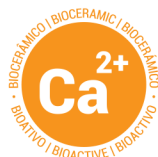


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Bioceramic based root canal sealer

As biological as  
the pulp tissue



**TUBES**  
available with  
12 grs and 30 grs

**SYRINGE**  
available  
with 4 grs



## MTA Repair HP

Bioceramic reparative cement with high plasticity

The same efficiency  
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available with  
2 and 5 applications

- **Biocompatible:** Fast tissue recovery without causing inflammatory reactions;
- **High radiopacity:** great radiographic visualization;
- **Excellent flow:** allows filling of accessory canals.

- **Formula with P.A. raw material:** No contaminants or heavy metals
- **High plasticity:** Better handling and insertion
- **Bismuth-free:** Does not stain the dental structure



## / HALL 5

14:00 – 18:00 /

### **ESE Pre-congress symposium: Designing and running Randomised Control Trials and laboratory research projects**

*Led by Hal Duncan*

#### **Overview**

This interactive pre-congress workshop will provide participants with an insight into laboratory study and randomised controlled trial planning. The key aims are to:

- Engage participants wishing to design, plan, execute and publish a wide range of scientific studies;
- Stimulate discussion and improve knowledge by the use of scenarios, protocols and published examples;
- Understand the importance of a good research question, protocol and pilot study;
- Be aware of the common problems and pitfalls in conducting research studies.

**Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/trials>

14:00 – 14:30 /

#### **Designing research that matters**

### **Designing and running Randomised Control Trials and laboratory research projects**

*Hal Duncan*



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14:30 – 15:45 /

#### **Laboratory studies (designing and running studies)**

*Ikhlas El Karim*



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15:45 – 16:15 / **COFFEE BREAK**

16:15 – 18:00 /

#### **Clinical studies (designing and running randomised control trials)**

*Helena Fransson*



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18:00 / **SESSION ENDS**

## / HALL 6

14:00 – 18:00 /

### **ESE pre-congress symposium: New Orofacial Pain Classification ICOP-1 beta – What's in it for the endodontists?**

#### **Overview**

A new international classification for orofacial and head pain was developed in 2017-18 by a collaboration between the International Association for the Study of Pain (IASP), the International Headache Society (IHS), and the International Network for Orofacial Pain and Related Disorders Methodology (INFORM). The International Classification for Orofacial and head Pain (ICOP) is the first classification that includes both acute and chronic pain in the orofacial area, as well as being integrated with headache diagnoses and other pain classifications. The purpose is to provide healthcare providers and researchers with a tool for diagnosis and categorization of cases. Definitions and diagnostic criteria are provided for dental and dentoalveolar pain conditions, such as pulpal, periodontal and mucosal pain, along with regional muscle pain, TMJ pain, orofacial neuropathic and idiopathic pain conditions, as well as trigeminal pain associated with migraine and autonomic disorders. In orofacial pain research, the proposed new classification is important because it has the potential to improve the basis for research in diagnostics and treatment. For endodontists, orofacial pain research is highly relevant since we frequently encounter acute as well as chronic tooth pain in our patients, and are frequently required to differential diagnose between pain conditions. The overall aim of this pre-congress course is to invite active participation and feedback from the endodontic community to ensure this perspective is incorporated in the final edition of the classification.

#### **Aims**

Contribute to participants' awareness about the present level of scientific evidence for diagnostic methods used in endodontics today, and needs for development in this field.

#### **Objectives**

Pain is a well-known feature of endodontic disease, and when we dentists assess patients with pain complaints, we routinely take into consideration a number of aspects, such as how the pain presents, e.g. the pain intensity, frequency, duration and modifying factors. We also interpret clinical signs such as periodontal probing depth or tenderness on percussion, and the results of various diagnostic tests, including response to pulp vitality tests, into a diagnosis. But how strong is the scientific support for the validity of endodontic diagnostic methods, and is there a need for more knowledge? Where should research in dental pain diagnostics be going? After presentation of the current state and suggested future direction, discussion will be invited.

#### **Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/pain>

14:00 – 15:00 /

### **Why do we need an orofacial pain classification? Gain understanding about common systems for classification and their relevance in dentistry and medicine**

*Donald Nixdorf*



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15:00 – 16:00 /

## **What is the ICOP and how does it fit in with our endodontic diagnoses?**

*Alan Law*



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16:00 – 16:30 / **COFFEE BREAK**

16:30 – 17:30 /

## **Differential diagnostics in painful tooth conditions – what we know today and what we do not**

*Maria Pigg*



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17:30 /

## **Discussion**

18:00 / **SESSION ENDS**

## / Meeting Room 0.16

14:00 – 18:00 /

### **ESE Pre-congress symposium: Current advances and controversies in tooth, root and canal anatomy**

*Led by Hany Ahmed and Marco Versiani*

#### **Overview**

Over the last century, the complexity of root and canal systems has been well documented using numerous techniques. More recently, technological advances in 3D computed tomographic imaging have given rise to more accurate methods for evaluation of tooth anatomy and also revealed inconsistencies in the classification of the internal anatomy of several tooth types. The main purpose of this pre-congress workshop is to provide participants with up-to-date clinical and laboratory evidence on root and canal anatomy.

#### **The key aims are to:**

- Present innovations in the field of imaging technology for the study of root and canal anatomy;
- Discuss how these advances in 3D imaging and our better understanding of internal tooth anatomy impact on patient care;
- Summarize our knowledge on the anatomy of human teeth acquired by the most recent in vivo epidemiological studies;
- Engage participants in the discussion of controversies in root and root canal terminology, concepts and classifications.

**Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/anatomy>

## / PART 1

### **Advances in tomographic imaging systems for characterization of root canal morphology**

14:00 – 14:25 /

#### **Micro-CT and Nano-CT: cutting-edge technology to study root canal anatomy**

*Marco Versiani*



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14:25 – 14:50 /

#### **What's new on the study of root canal anatomy with recent non-destructive high-resolution technologies?**

*Ronald Ordinola Zapata*



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14:50 – 15:15 /

## **Epidemiological studies on canal anatomy in large populations using CBCT: what's new?**

*Jorge N.R. Martins*



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15:15 – 15:40 /

## **CBCT on root canal anatomy: what can't we see? Advantages and limitations**

*Marc Semper*



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15:40 – 16:10 / **COFFEE BREAK**

## **/ PART 2**

### **Controversial issues in root canal anatomy and the use of terminology**

16:10 – 16:40 /

## **New findings to explain the complexity of apical canal anatomy**

*Ali Keleş*



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16:40 – 17:10 /

## **An update on the unique anatomy of C-shaped root canals**

*Bing Fan*



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17:10 – 17:40 /

## **Controversies in terminology and characterization of the root and canal system: a new approach**

*Hany Mohamed Aly Ahmed*



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### **/ PART 3**

#### **Discussion with speakers**

*Hany Mohamed Aly Ahmed; Ronald Ordinola Zapata; Marco Versiani; Jorge Martins; Marc Semper; Bing Fan; Ali Keleş*

18:00 / **SESSION ENDS**

*Cordless  
Obturation  
System*



*Fast-Pack*

*Fast-Fill*





## / Meeting Room 0.14

13:00 – 17:00 /

### ESE Pre-congress course: Optimized flap design and advanced suturing techniques in Endodontic Microsurgery

#### Overview

Advanced endodontic microsurgery requires proper retrograde root canal treatment and precise soft tissue management.

This Hands-On-Workshop using pig jaws is designed to provide the most up-to-date concepts of the various flap designs used in endodontic microsurgery. Each participant will perform several muco-gingival flaps and new types of incisions for specific clinical situations. You will learn how to handle gingival recession during endodontic surgery and how to create and design flaps when restored implants are in the immediate vicinity. Several suturing techniques will be demonstrated and practiced. The use of a surgical operating microscope will be incorporated in the training. A large part of the programme will involve hands-on-training combined with the most relevant background information.

**Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/flapdesign>

13:00 – 13:15 /

### Introduction: Microscopic Endodontic Surgery - The Key Issues

*Christof Pertl; Gilberto Debelian*



#### Christof Pertl:

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#### Gilberto Debelian:

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13:15 – 13:45 /

### Standard Flap Designs

*Gilberto Debelian; Georg Watzak*



#### Georg Watzak:

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13:45 – 15:00 /

**Hands-on session: Intrасulcular and Para-Gingival Flaps**

15:00 – 15:30 /

**Advanced Incisions, Specific Sutures and Soft Tissue Management**

*Christof Pertl; Gilberto Debelian*



15:30 – 16:45 /

**Hands-on-Session: Modified Muco-Gingival Incisions and Suturing Techniques**

16:45 /

**Discussion**

17:00 / **SESSION ENDS**



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## Meeting Rooms 0.94 & 0.95

15:00 – 18:00 /

### Pre-congress course - Fotona: Laser activated SWEEPS® irrigation

#### / HANDS-ON AND LECTURE COURSE

##### Overview

This course is designed to provide evidence-based core knowledge in the use of lasers in endodontics. The revolutionary photoacoustic streaming method uses the power of the Er:YAG laser with specially designed laser modalities and fiber tips to create non-thermal photoacoustic shock waves within the irrigant. Investigations have demonstrated that the activation of endodontic irrigants inside the canal structure results in in-depth cleaning and disinfection. Further advantages, such as less time and less instrumentation needed for a more effective treatment, will be discussed.

##### Aims:

You will learn the SSP protocol, also known as the Fotona LightWalker's PIPS protocol, a unique Laser Activated Irrigation (LAI) procedure that will improve your results in root canal therapy. Recently introduced additional SWEEPS (Shock Wave Enhanced Emission Photoacoustic Streaming) protocols will also be described. Emphasis will be placed on the integration of YOUR commonly performed root canal therapy with laser technology, on the improvement of YOUR clinical results, and on performing step-by-step techniques in root canal therapy to ensure optimal benefits for YOUR patients.

##### Further information can be found on the ESE website at:

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/pre-fotona>

15:00 – 15:40 /

### Laser-activated irrigation and recent developments in the SWEEPS® approach: everything you need to know

*Roeland De Moor*

15:40 – 16:20 /

### Clinical applications of SWEEPS® disinfection protocols in endodontic treatments

*Igor Kriznar*

16:20 – 17:00 /

### Er:YAG activated irrigation. What about extrusion?

*Ales Fidler*

17:00 – 18:00 /

### Hands on

18:00 / **SESSION ENDS**

## / Meeting Rooms 0.96 & 0.97

13:00 – 17:00 /

### **Pre-congress course - Eighteenth Medical: Real World Techniques for instrumentation and obturation**

#### **Overview**

In this presentation and workshop, Dr. Allen Ali Nasseh reviews some basic techniques for instrumentation and obturation using bioceramics in conjunction with either cold hydraulic condensation or warm vertical compaction. Topics of irrigation and instrument motion will also be discussed and demonstrated. A discussion on vital pulp therapy will be included. During the workshop, some of the mentioned instrumentation and obturation techniques will be demonstrated using plastic blocks. Participants are encouraged to bring a sterile, extracted teeth that are accessed and instrumented to a size 8 hand file (confirm patency) for a more realistic verification of the demonstrated techniques.

#### **Objectives:**

Participants will learn about:

- 1) A simple instrumentation protocol in conjunction with bioceramic obturation;
- 2) Effective irrigation and disinfection protocols;
- 3) Effective instrument motion to reduce the incidence of file separation.

#### **Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/preeightteeth>

13:00 – 14:45 /

#### **Lecture**

*Allen Ali Nasseh*



14:45 – 16:45 /

### **Hands-on session: Techniques for instrumentation and obturation using bioceramics in conjunction with either cold hydraulic condensation or warm vertical compaction.**

16:45 – 17:00 /

#### **Discussion**

17:00 / **SESSION ENDS**

**/ Meeting Room 0.49****Pre-congress course - FKG: Moving forward to a new era in root canal therapy: Adaptive techniques for conservative treatment and retreatment****08:30 – 11:30 / SESSION 1***Martin Trope***13:00 – 16:30 / SESSION 2 (REPEAT OF SESSION 1)***Martin Trope***Overview**

Success in endodontics requires maximal microbial control while maintaining the strength and thus survivability of the tooth. Round solid core files cannot touch the walls of non-round canals without substantially weakening the root. New adaptive instruments that can touch more canal surface area while leaving a thicker and stronger root are now available. These instruments are easy to use and are cost effective since one instrument can adapt to more than one canal shape and save significant amount of time. In this hands-on program the important differences between these instruments will be explained and demonstrated. Small but critical practical changes that the practitioner must master will be demonstrated and practiced in the workshop for both primary and retreatment. Finally, a new passive obturation technique that completes this new philosophy will be shown.

**Aim**

The hands-on program aims to convince the participant of the benefits of the new approach from a biologic and clinical point of view.

**Objectives:**

At the end of the hands-on program the participant will:

- 1) Understand the limitations of solid core round files;
- 2) Understand how the new adaptive instruments solve most of the problems of the older solid core files;
- 3) Appreciate the subtle differences in using these new instruments compared to the older technologies;
- 4) Appreciate the ease and benefits of passive sealer based obturation.

**Further information can be found on the ESE website at:**

<https://www.e-s-e.eu/e-se-biennial-congress/vienna2019/timetable/prefkg>

**/ HALL 1 (Level -2)****18:30 – 19:00 /****Opening Ceremony****/ EXHIBITION HALL (Level 0)****19:00 – 21:00 /****Welcome Reception**

## PROGRAMME

### / HALL 1

/ **Session chair:** *Marco Georgi*

09:45 – 10:30 /

#### **Endodontics - towards the future**

*Markus Haapasalo*



##### **Abstract**

The aetiology and goals of endodontic treatment have long been understood and quite well agreed on. However, for the past century, progress in endodontics has been incremental. Several “non-revolutionary” improvements in diagnostic methods, materials, instruments and equipment have contributed to continuous yet small improvements in the treatment, mostly measured by both dentist and patient satisfaction. Cross-sectional epidemiological studies in different countries done 20 -30 years ago and again recently, however, do not indicate major improvements in treatment outcome. This presentation gives a short analytical summary of the past and then looks to the future, painting a more promising view of the new era in endodontics that actually has just begun already... be prepared to be surprised!

##### **Aims**

To understand why and how we are where we are presently in endodontic treatment, and how a new era has already started.

##### **Objectives**

The objectives are:

- To have a bird's perspective to the present status of endodontic treatment and understand the shortcomings;
- To have a positively critical/analytical view of the shape-clean-fill triad;
- To understand the philosophy and practice of new approaches to the next level of endodontic treatment.

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10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:45 /

#### **The future - the relationship between Endodontics and Restorative Dentistry**

*Peter Briggs*



##### **Abstract**

Endodontic therapy allows the maintenance of natural teeth for aesthetic and cosmetic benefit of patients. The relationship between endodontics at routine, enhanced and complex levels and restorative dentistry needs to be good. Higher expectation of our ageing populations will mean more focus on re-cycling of restorations and root fillings. The oral health needs and wellbeing of the European population is changing rapidly with a general overall reduction in prevalence and complexity of dental disease. There has been a significant change in restorative concepts over the last 20 years that allow more conservative approaches to be used to restore teeth. Such changes include the 'Dahl concept' and better understanding of the aetiology and prevention of tooth wear. Advancements in Dental materials and 3D digitisation will affect the knowledge and skills needed for those responsible for primary and secondary endodontic therapy of compromised teeth in the future. Many younger dentists will have done less conventional indirect restorations themselves



but will need to be able to manage teeth and dentitions restored with such restorations when caries, pulpal or periapical pathosis dictates. Although the shift to additive adhesive restorative procedures is generally positive, the implications for patients in the UK, and other countries committed to the Minamata Convention phase down, are unclear as the profession moves away from significant use of dental amalgam. The ageing baby boomer generation will create significant challenges for us in the future as the number of dentate patients living with old age and dementia will grow significantly with heavily restored teeth. With less time now devoted to formalised education and practical skills-training are we prepared for the future challenge of endodontic and restorative re-cycling and re-restorability? Are we able to train and encourage our young dentists to deliver high quality endodontic treatment across the various complexity bands?

## Aims

Understand the change in Oral health needs of our population and the likely shift in restorative and endodontic skills required.

Identify the important oral and dental diseases of the future population Discuss how recent concept and changes in restorative dentistry should positively impact on endodontic treatment needs of restored dentitions.

## Objectives

Discuss the Restorative / Endodontic interface and re-cycling with focus on tooth restorability for both conventional and adhesive restorations Outline the unintended consequences for countries (like the UK) who are moving away rapidly from use of dental amalgam - in line with Minamata agreement; where they have previously routinely relied upon this material to restore vital and endodontically-treated posterior teeth for patients with a high susceptibility to dental disease. Understand the specific challenges for dentists of Generation X (1965 – 1976), Generation Y (1977 – 1997) and Generation Z (after 1998) to acquire complex restorative / endodontic skills for the future. Highlight the implication to the younger clinicians who live in fear of litigation, and complaints to the dental regulator, and the long-term effect this will have on the dental profession.

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11:45 – 12:30 /

## The future - the prevalence of pulp and periapical diseases

*Lise-Lotte Kirkevang*



## Abstract

Endodontology deals with the causes, diagnosis, prevention, and treatment of diseases of the dental pulp and their sequelae. We know that the prevalence of apical periodontitis in populations is high, and that the proportion of successful root canal treatments is low, compared to what is obtained in controlled clinical settings. Further, we know that the risk of apical periodontitis is higher in root filled teeth if the root filling is assessed inadequate. On the other hand, it has been documented that root filled teeth most often are retained for many years, with or without evidence of periapical disease. This pattern has not changed much during the last decade or more, even though there has been an enormous development in treatment-related instruments and optical aids. Additionally, the diagnostic methods provide more and more detailed, and perhaps more precise, information. The questions remain: Will the improvement of instruments and materials improve the endodontic status in the general population? Will new diagnostic methods affect our diagnostic thinking and eventually lead to other treatments for the patient? During recent years, there has been a trend towards less invasive endodontic treatments to maintain pulp vitality. How will that influence the endodontic status? The population is ageing and the proportion of elderly individuals will increase. How will this affect our treatment and treatment choices, and the prevalence of apical periodontitis in the population?

## Aims

To discuss endodontic status in the population, and relate it to present and future improvements and challenges.

## Objectives

To discuss the implementation of new diagnostic tools, changes in treatment strategies and the use of more patient-based outcomes and the possible effect on dental and general health in a population with a higher proportion of elderly individuals.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

/ **Session chair:** *Karl Schwaninger*

14:30 – 15:15 /

## The future - the impact of CBCT imaging on endodontic treatment planning

*Rubens Spin-Neto*



## Abstract

For several years, intra-oral images (i.e. periapical images) have been state-of-the-art for diagnosing and establishing the treatment plan for periapical lesions. As these are two-dimensional images, some areas might not be possible to evaluate clearly, due to overlapping of anatomical structures or areas where dense cortical bone masks small areas of mineral loss in the cancellous bone. In the present, imaging guidelines focusing into the use CBCT imaging to overcome problems such as the superimposition of anatomical structures. Implementing CBCT may benefit the field of endodontics as an additional diagnostic method to be used in cases when the clinical examination, patient symptoms, and traditional two-dimensional imaging techniques do not give clear answer. Currently, we accept that even though CBCT generally shows a higher sensitivity for detecting small periapical lesions compared to periapical images, while the clinical documentation of the diagnostic accuracy of CBCT is yet to be disclosed. In the future, we need to concentrate on what the dentist, the patient, and the society gain from implementing CBCT in the decision-making and therapeutic process in relation to the endodontic treatment planning. In other words, we need to clarify how the use of CBCT will affect endodontic treatment choice and (eventually) its outcome. Current information does not show to what extent the use of CBCT is beneficial to the patient (or even to the dentist). Further, no studies have evaluated whether the use of CBCT will affect the prognosis of the treatment (e.g. healing of a periapical lesion). At last, there is a lack of information regarding the socio-economic effects and the effect of an increased radiation burden to the population of systematic use of CBCT as a supplement during endodontic treatment planning.

## Aims

The main aims of the lecture will be to discuss the probable next steps regarding the use of CBCT imaging on endodontic treatment planning.

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15:15 – 16:00 /

## The future - endodontic microbiology

*Luis Chavez de Paz*



### Abstract

The evolution of endodontic microbiology is a response to clinical needs. This can take the form of an increased demand to translate results from research and technical innovations garnered from laboratory investigations to improve anti-infective therapies. With the inclusion of biofilm biology in endodontics, research in endodontic microbiology is slowly abandoning the dogma of the pure culture technique. Moreover, molecular biology techniques have improved our knowledge of endodontic infections and promise to revolutionize the diagnosis of endodontic disease. This lecture offers a framework of what's to come in the field of endodontic microbiology, based mostly on the evolutionary pace of microbiologic studies witnessed over the past years.

### Aims

The main goal of this lecture is to provide an overview of the current status of endodontic microbiology research and what's next to come.

### Objectives

- List the applications of innovative methods used in microbiology to improve clinical outcome;
- Define the importance of improving the translation of basic science studies to meet clinical needs;
- Define the place that basic research in endodontic microbiology has in the context of endodontic pathobiology.

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16:00 – 16:30 / **COFFEE BREAK**

/ **Session Chair:** *Thilo Weeger*

16:30 – 17:15 /

## The future - access cavity design

### Rational approach and future perspectives on access cavity designs

*Antonis Chaniotis*



### Abstract

Recently the endodontic specialty experienced multiple technological advancements. These advancements enabled the application of minimal invasive dentistry concepts in clinical endodontics. The geometrically predesigned shapes of access cavity designs were the first to be affected by this minimalistic invasion. Traditional access cavity designs were questioned, regarded as legacy concepts and modified to fit current minimal invasive trends. The objective was always dentin conservation that might benefit the patients by increasing the longevity of the endodontically treated teeth. Although dentin conservation during access cavity designs seems logical, problems do exist and more research is needed to grow the evidence for minimal invasive intervention.

## Aims

To investigate the current trends in access cavity shapes, their benefits and drawbacks. The future of access cavities might be exciting.

## Objectives

- Develop a rational approach to minimal invasiveness in endodontics;
- Investigate the influence of different access cavities on root canal treatment procedures;
- Suggest solutions for clinical problems during access cavity preparation;
- Reflect on the future of access cavity designs.

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17:15 – 18:00 /

## The future - working length estimation and control

### How to make it easy

*Vittorio Franco*



## Abstract

Endodontic treatments are currently based on changes in the shape and contents of what is known as the endodontic space: it is difficult to distinguish the point, or, better, the so-called passage plan between “in” and “out”. periodical radiographs, electronic apex locators and CBCT are currently the most popular methods to establish the distance between a coronal and an apical reference point: this distance at the end of the shaping procedure could decrease and become shorter due to the removal of the interferences in the root canal. For that reason shaping under continuous control of an apex locator will be described, giving attention to the pros and cons of this method. The last part of the presentation will be focused on the other steps of the root canal treatment and the possibility to reconsider in the future the current gold standards.

## Aims

Aim of this lecture is to give to the participant a clear vision of the current methods for establishing the working length and how to optimise this information.

## Objectives

The participant will reinforce his knowledge about the working length issue, understanding the limits and benefits of the current techniques.

18:00 / **SESSION ENDS**

## / HALL 2

/ **Session chair:** *Christof Pertl*

09:45 – 10:30 /

### **Intentional replantation and autotransplantation Interdisciplinary management of the legacy of complex trauma in children and adolescents**

*Monty Duggal*



#### **Abstract**

Paediatric Dentists are in a privileged position of treating young patients who are in a period of growth and development. Interdisciplinary and multidisciplinary team efforts for the treatment of young children and adolescents with developmental defects and who are unfortunate to suffer severe dento-alveolar trauma, will ensure good long term outcomes for the patients. The management of much dental trauma in a growing child patient requires interdisciplinary management, such as intrusion injuries that may require orthodontic extrusion. Also, there are implications for the orthodontic movement of teeth that have been traumatised in the past as many of these will remain prone to external root resorption during orthodontic movement. In particular teeth that become ankylosed after trauma pose a serious management issues for clinicians with a very severe long term implications for the child. What are the management options for such teeth? What should clinicians do for teeth that are ankylosed and are getting infra-occluded? Infra-occluding teeth can have disastrous consequences for the patient in the long term due to lack of alveolar bone growth in that region. Bone management requires complex treatment planning but is crucial for a good prognosis for the child in the long term. The speaker will present the methods for conserving bone in region of ankylosis, and the role of the interdisciplinary team working between orthodontists and Paediatric dentists to secure the best outcome for the child into adulthood. We have developed a true interdisciplinary approach for the management of anterior teeth with poor prognosis as a result of dental trauma. This involves bone management at the affected site followed by autotransplantation. Since the inception of this programme we have placed over 250 transplants using the multidisciplinary team comprising of both paediatric dentistry and orthodontic expertise.

#### **Aims**

This talk will aim to map out the journey of a young child which starts at the time the child suffers severe trauma to anterior teeth through to adulthood where lost anterior teeth are replaced biologically to give this patient a good and sustainable, long term outcome.

#### **Objectives**

- To understand the impact of previous trauma;
- To understand the role of orthodontics in the treatment of traumatised teeth;
- The role of orthodontics in treatment of traumatized teeth of poor prognosis - the role interdisciplinary care in dental Traumatology;
- Management of bone when loss of tooth is inevitable;
- Rationale and outcomes for tooth transplantation in children.

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10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair:** *Christof Pertl*

11:00 – 11:45 /

## **Herpesviruses as putative pathogens in endodontic diseases**

*Aleksandar Jakovljević*



### **Abstract**

In 2003 herpesviruses were proposed as putative pathogens in endodontic diseases. Their involvement in the development of apical periodontitis may be a direct consequence of viral infection, or an indirect repercussion of virally induced impairment of local host defence that will in turn favour bacterial overgrowth. It is assumed that the interactions between herpesviruses and bacteria, at the site of periapical inflammation, are responsible for the expression of various clinical characteristics of endodontic diseases. Epstein-Barr virus and Human cytomegalovirus are the most frequently detected viruses in apical periodontitis and periodontal abscess samples, and their occurrence has been related to symptomatic and large-sized periapical lesions in previously conducted studies. In addition, Varicella-zoster virus has been also recognized as a potential causative agent of apical periodontitis and root cervical resorption with unspecific clinical manifestations. Although several hypotheses of herpesviral involvement in the pathogenesis of apical periodontitis have been proposed, some controversies are still present. Also, underlying molecular mechanisms and pathways need to be better understood.

### **Aims**

To present the current knowledge on herpesviral infections in endodontic diseases in terms of their impact on clinical, radiographic and histopathological findings. In addition, methodological issues related to differences in the detection rates of herpesviruses in previously conducted studies, will be discussed.

### **Objectives**

Participants should be able to critically assess the significance of herpesviral infection in the pathogenesis of endodontic diseases and discuss potential clinical implications, methodological issues, and further perspectives in research and treatment of potentially infected patients.

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11:45 – 12:30 /

## **Persistent orofacial pain and endodontics: pre-op and post-op considerations**

*Justin Durham*



### **Abstract**

This presentation will outline and discuss the causes of persistent orofacial pain that can masquerade as odontogenic pain pre-operatively and those that present post-operatively complicating endodontic decision-making in the healing phase. The following conditions will be specifically addressed: Temporomandibular disorders that refer pain to the dentition; tooth pain. Diagnostic strategies will be outlined alongside management options.

### **Aims**

To outline and discuss the causes of persistent orofacial pain that can masquerade as odontogenic pain pre-operatively and those that present post-operatively complicating endodontic decision-making in the healing phase.



## Objectives

- Identify the referral propensity and patterns of Temporomandibular Disorders to the dentition;
- Outline the differing presentations of Trigeminal Neuralgia in respect of the dentition;
- To be able to effectively screen for, and then increase the index of suspicion of 'phantom' tooth pain following endodontics.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

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## / HALL 2

14:30 – 18:00 /

### **Symposium: External Cervical Resorption**

Led by Shanon Patel

14:35 – 15:10 /

### **Aetiology and potential predisposing factors**

Federico Foschi



#### **Abstract**

Unlike other oral diseases such as caries and periodontitis, there is limited evidence on the aetiology of External Cervical Resorption (ECR). The literature is replete with possible predisposing factors; trauma and orthodontic treatment being the most commonly cited. However, more spurious causes have also been hypothesised such as bisphosphonates and even poor oral hygiene. However, there with no good evidence of a 'cause and effect' for any of these proposed factors. ECR may simply be an idiopathic in nature. To date, there have been no in vivo aetiological models. Emerging research using molecular methods is now being carried out at King's College London with the aim of identifying different upregulated markers which may be present within ECR which ultimately may ultimately give a true insight in the of different aetiological factors. Several retrospective studies have identified that maxillary incisor/canine teeth, as well as maxillary and mandibular molar teeth are the most commonly affected teeth. Why is ECR so prevalent amongst these teeth groups?

#### **Aims**

ECR are detected with increased diagnostic acuity thanks to CBCT, allowing a precise and early stage detection. Although the aetiology of ECR may not influence the subsequent clinical management, understanding the predisposing factors and potential aetiological causes will allow to provide an informed care to patients and minimising predisposing factors.

#### **Objectives**

- Appreciate the suggested aetiological causes of ECR;
- Recognise the potential predisposing factors contributing to ECR formation;
- Consider the effect of aetiological factors on clinical management;
- Understand the distribution of ECR.

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15:10 – 15:45 /

### **Pathogenesis and histology of External Cervical Resorption**

Athina-Maria Mavridou



#### **Abstract**

The pathology of ECR is challenging, since it is often asymptomatic and its clinical and radiographic presentation varies. Thus, in vivo Cone-beam CT, in vitro 3D imaging (Nano-CT) and histological analysis are essential to visualize and understand the characteristics and morphology of this condition. In addition, hard and soft tissue histology are essential to investigate the type of tissue and cells involved, as well as to match the morphology (based on 3D analysis) with the structure on the cellular level. Based on these findings different concepts will be presented, whereas the potential stimulus of this pathology will be discussed.

#### **Aims**

This work aims in analysing and discussing the pathogenesis and histology of External Cervical Resorption (ECR) and proposes new concepts on the 'why' and 'how' ECR is triggered and evolves.

## Objectives

- Morphology of ECR based on 3D imaging and histological techniques;
- Pattern of ECR based on histological analysis;
- Possible triggering factors for ECR evolution.

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15:45 – 16:00 /

## Discussion

16:00 – 16:30 / **COFFEE BREAK**

16:30 – 17:20 /

## Diagnosis and management of external cervical tooth resorption

*Shanon Patel*



## Abstract

External Cervical Resorption (ECR) is a relatively common phenomenon, which is often misdiagnosed. Its significance and also recent, novel research in this area has resulted in the European Society of Endodontology publishing a position statement on ECR. There is emerging evidence to suggest that there is no 'classic' clinical or radiographic presentation of ECR. The accuracy of diagnosis of ECR has improved significantly with the introduction of CBCT; for the first time the true nature of ECR can be truly appreciated. Novel ex-vivo and in-vivo research has resulted in a clinically relevant 3-dimensional classification being devised to allow better communication of ECR between colleagues. This improved 3-dimensional visualization of ECR means that the clinician appreciates the extent of ECR, and may therefore offer the most appropriate management. Treatment options include; external repair, internal repair, intentional replantation, periodic reviews or extraction.

## Aims

To present the latest, clinically relevant and cutting-edge research on diagnosis and management of ECR.

## Objectives

The delegate will have a clear understanding of:

- The various clinical presentations of ECR;
- The impact of CBCT on the radiographic presentation of ECR;
- The benefits of the 3D ECR classification;
- Effective management strategies.

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17:20 – 18:00 /

## Discussion

18:00 / **SESSION ENDS**

## / HALL 3

09:00 – 12:30 /

### **Symposium: Micro- and nano-CT in endodontic research**

Led by Dag Ørstavik

09:00 – 09:05 /

### **Introduction Micro- and nano-CT in endodontic research**

Dag Ørstavik



#### **Abstract**

Three-dimensional imaging has greatly improved diagnostic and therapeutic approaches in medicine and dentistry. Particularly, hard-tissue analyses with various computer tomographic techniques have proven to be of special value in dentistry and endodontics. Micro-CT and now nano-CT are exciting tools that find ever-expanding applications in endodontic research. While the complex structures of enamel, dentine and tooth cementum have been studied by 2-D techniques for a long time, micro- and nano-CT technology, with resolutions down to 300-500 nanometer voxels, opens new vistas for illustrating and thereby understanding the details of the hard tissues.

#### **Aims**

The symposium aims to describe recent advances of applications of micro-CT, and to explore the emerging field of nano-CT investigations in endodontics, hosting experienced researchers in the field and showing exciting new data.

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09:05 – 09:40 /

### **Fundamental aspects of micro and nano-CT applied to biological tissues**

Liebert Parreiras Nogueira



#### **Abstract**

Man has always sought to understand what cannot be seen by naked eyes, and this curiosity has been fulfilled over time by the improvement in technology, especially in the medical field such as optical microscopes, the discovery of x-rays as well as its applications, etc. All this is allowing for unveiling microstructures as never before. Among these, one can highlight the advances in radiographic imaging, which started yet in the 18th century, and developed up to the possibility of the 3D computed tomography in the seventies, and that now can allow the non-destructively visualization of structures in the sub-micrometer resolution. MicroCT is already widely used in studies of mineralized tissues, but when it comes to soft tissues it is often limited by low imaging contrast. Some limitations can be overcome to some extent by adjusting the working parameters of micro-CT equipment, while others need more detailed preparation of the samples.

#### **Aims**

We will present important principles on microCT, as well as the challenges and recent developments for overcoming some important issues in microCT.

## Objectives

Understand the fundamental principles of microCT with its possibilities, limitations and some special issues on soft tissue enhancement.

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09:40 – 10:20 /

## Micro and nano-CT applied to dental research

*Håvard Jostein Haugen*



## Abstract

X-ray imaging including tomography has developed rapidly over the last decade, and the technological advances and user friendliness have made the technique applicable to virtually all branches of the natural sciences and manufacturing industries. The unique advantages of X-ray imaging reside in the combination of high resolution, the penetrating ability of looking inside materials even through complex sample environments, and the relative ease with which the resulting images can be interpreted. Still, X-ray imaging keeps progressing and near-future breakthroughs will include ultrafast measurements, computer-assisted image interpretation (machine vision & learning) and lower-dose measurements. 3D images are easy to grasp, and CT is quite literally an eye-opener to internal processes in living and functional objects. Also for the general public and popular dissemination, CT images are easily digested and of invaluable importance when it comes to visualizing complex internal structures. Technically, a range of different contrast mechanisms can be employed (diffraction, scattering, and absorption) where the spatial resolution may reach a few nanometres, while temporal resolutions can be below one microsecond. Such developments are typically spearheaded at international large-scale facilities (synchrotrons and free-electron lasers), but also rapidly adapted to laboratory-based equipment. These fundamental aspects of nano-CT will be address for application to dental tissues.

## Aims

Present recent developments in X-ray imaging including tomography for dental research.

## Objectives

The lecturer will provide the audience with an overview of the recent technological advancement and limitation in X-ray imaging.

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10:20 – 10:30 /

## Discussion

10:30 – 11:00 / **COFFEE BREAK**



11:00 – 11:40 /

## Morphometric tooth analysis by micro-CT

Gaute Floer Johnsen



### Abstract

The comparative anatomy of contralateral premolars has not been previously studied using micro-CT technology. Micro-computed tomography investigations allows for detailed to assessment and comparison of the morphology of contralateral premolars in terms of linear measurements and anatomic/morphometric characteristics. Micro-CT technology along with metrology software can validate the use of contralateral premolars as samples in endodontic comparison studies.

### Aims

Demonstrate the morphometric and anatomic similarity of contralateral premolars, thereby showing how they are ideal substrates for endodontic comparison studies.

### Objectives

- Qualitatively and quantitatively describe and compare the similarity of the anatomy/morphology of contralateral premolars' pulp cavity in terms of shape deviation analysis and simple morphometric geometric parameters;
- Assess and compare the morphology of contralateral premolars' pulp cavity in terms of anatomic characteristics such as length, canal width, dentinal thicknesses, accessory canals, root canal configurations, isthmi, C-shapes, root canal orifices, and apical foramina;
- Showing how micro-CT technology and metrology software can be used to validate the use of contralateral premolars in endodontic comparison studies by comparing their root canal systems before and after canal instrumentation with one instrumentation system.

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11:40 – 12:20 /

## Applications of nano-CT in endodontic research

Pia Sunde



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12:20 – 12:30 /

## Discussion

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**



## / HALL 3

14:30 – 18:00 /

### **Symposium: The impact of tooth anatomy on intracanal procedures**

*Led by Ronald Ordinola Zapata*

14:30 – 15:10 /

#### **Managing the complex anatomy of single rooted teeth: mandibular premolars and dens invaginatus**

*Sashi Nallapati*



#### **Abstract**

Many endodontic failures are contributed to poor management of complex anatomy. No other group of teeth have more complex anatomy than Mandibular Premolars and Dens Invaginatus. With the help of 2D and 3D imaging, clinical photographs, Case Series with long term follow up, this presentation discusses complex anatomic variations in mandibular premolars and Dens Invaginatus teeth as well as the strategic clinical management directed at obtaining successful long term results.

#### **Aims**

To discuss how complex anatomy can influence clinical outcomes and highlight the anatomic variations and management strategies in mandibular premolar and Dens Invaginatus teeth.

#### **Objectives**

- Highlight the anatomic variations in mandibular premolars;
- Highlight the anatomic variations in Dens Invaginatus;
- Discuss clinical management strategies for successful outcomes in this case type.

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15:10 – 16:00 /

#### **Managing the complex anatomy of posterior teeth: surgical and non-surgical approaches**

*Stephen Niemczyk*



#### **Abstract**

The surgical solution to a conventionally treated tooth that had become refractory to healing was once considered the next and final step prior to extraction, and that it was a singularly-occurring event. Considering contemporary techniques and technologies, are either of these statements true? Or should it be viewed as one extension of the current therapy, in addition to retreatment, in a process of revision and remodelling. When is it appropriate to consider a second intervention, either surgical or non-surgical, and what metrics are we using to determine this? Are they stand-alone procedures, or are outcomes enhanced with co-treatment options? What is the alternative if the conventional surgical options are exhausted?

#### **Aims**

This presentation will examine the available literature for guidelines to these treatment decisions and, using multimedia, demonstrate various case scenarios and techniques.

## Objectives

- Appreciate the advantages of Virtual Surgery™ in pre-operative diagnosis and decision tree formulation;
- Identify the criteria established for choosing retreatment or re-surgery, and whether it can be in vivo or ex vivo;
- Describe the procedural steps required for each clinical revision of choice.

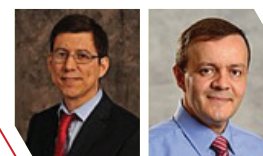
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16:00 – 16:30 / **COFFEE BREAK**

16:30 – 17:30 /

## Root canal anatomy, The truth is in the details

Ronald Ordinola Zapata; Marco Versiani



## Abstract

The overall idea of this symposium is to give the audience the concept of multidisciplinary treatment and to “not miss the forest for the trees”. Most of dentists do not appreciate the nature of tooth variability because they are only considering a few parameters for the planning of a clinical procedure (the curvature, the apical diameter, the taper, the irrigant, or the medicament). However, the tooth, the periodontal condition, the restorative prognosis and the patient should be considered as a single entity.

## Aims

To demonstrate the advantages of magnification, CBCT imaging and micro-computed tomography technology to describe relevant anatomical concepts.

## Objectives

- To use representative clinical cases that includes the use of the operative microscope, CBCT imaging and follow-ups to illustrate the treatment of complex anatomy;
- To analyze the root canal anatomy of mandibular molars and its relationship with endodontic failures;
- To describe the apical anatomy of the mesiobuccal root of maxillary molars and its relationship with non-surgical and surgical endodontic procedures;
- To revise the actual concept of danger zone in mandibular molars.

**Ronald Ordinola Zapata:**

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**Marco Versiani:**

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17:30 /  
**Discussion**

18:00 / **SESSION ENDS**

Thursday, September 12th



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## / HALL 4

11:00 – 11:45 /

### **Eighteenth Medical lecture 1**

#### **20 Tips to improve root canal preparation and obturation**

*Mohammad Hammo*



#### **Abstract**

This presentation will describe many clinical tips for cleaning, shaping and obturation of root canal system. Those clinical tips will include: Canal Negotiation, Working Length Determination, Apical Patency, Enlargement of the Canals and Warm Obturation Techniques. Attendees will better understand the variety of practice modalities available and integrate smart clinical strategies to achieve better endodontic results.

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**This lecture and speaker is sponsored by Eighteenth Medical**

11:45 – 12:30 /

### **Coltène / Micro Mega lecture 1**

#### **Heat treatment & single file, why make that choice?**

*Tara Mc Mahon*



#### **Abstract**

Over the years, several key aspects of endodontic treatments have undergone tremendous evolutions to simplify the endodontic procedure. However, root canal anatomy has not changed. Most cases are initially challenging and will demand full concentration from the operator to achieve what is considered to be a good root canal treatment by all and allowing the tooth to heal and to be functional over time. Achieving such an ambitious program, can be challenging and some how frustrating. If the shaping of the canal becomes easier, safer and repeatable, then that is one step we won't have to worry about. Going single use, will simplify the organisation of a practice and permit to gain time, eliminating the complicated sterilisation procedures and insuring a new file for each patient. Using a single file system simplifies your operating procedure. However it has being noticed that most single file can be a little stiff. So the latter update of heat treatment seems to be the answer to enhance the single files properties when used in continuous rotation.

#### **Aims**

The lecture will aim to answer these questions: How, when and why did this combination of improvements become the key combination to simplify and potentiate most endodontic treatments?

**This lecture and speaker is sponsored by Coltène / Micro Mega**

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 15:15 /

### **Fotona Lecture**

#### **SWEEPS®: the evolution of bubbles**

*Giovanni Olivi*

**This lecture and speaker is sponsored by Fotona**

15:15 – 16:00 /

## Angelus lecture

### The past, the present and the future of Bioceramics in Endodontics

*Leandro Pereira*



This lecture and speaker is sponsored by Angelus

16:00 – 16:30 / **COFFEE BREAK**

16:30 – 17:15 /

## Dentsply Sirona Lecture

### TruNatomy: A Restoratively Driven Path to Endodontic Excellence

*Ove Peters*



#### Abstract

In addition to the conventional understanding of endodontic success determined by apical health, it has become evident that long-term retention is an important measure for the effectiveness of root canal treatments. Underpinning this strategy, TruNatomy is an innovative root canal treatment system built on the understanding that endodontic excellence will follow a restoratively driven path. TruNatomy allows a comprehensive and flexible treatment solution that preserves the structural integrity of the tooth and adapts to all your clinical situations. The system includes five innovative rotary instruments with a distinctive offset cross section and new advanced heat treatment, which provides excellent canal tracking and durability. TruNatomy provides a reproducible cantered glide path while the unique sizing promotes desired apical sizes without unnecessary coronal enlargement with just two or three instruments. The TruNatomy system offers a new flexible irrigation cannula, fitted gutta percha, electric heat plugger tip and paper points. This presentation is designed to introduce, in details, the new system by Dentsply Sirona and describe its features and use, combining excellent canal debridement with a smooth effortless feeling while shaping canals of all types of anatomy.

#### Aims

This presentation is designed to introduce, in detail, the new system by Dentsply Sirona and describe its features and use, combining excellent canal debridement with a smooth effortless feeling while shaping canals of all types of anatomy.

#### Objectives

At conclusion participants should be able to:

- highlight the relevance of restorability and restoration on endodontic outcomes;
- describe design elements and usage of the new TruNatomy system;
- apply clinically the principle of dentin preservation while promoting canal debridement.

This lecture and speaker is sponsored by Dentsply Sirona

17:15 - 18:00 /

## Woodpecker lecture 1

### How to perform better endodontics with ultrasonics

*Walid Nehme*

This lecture and speaker is sponsored by Woodpecker

18:00 / **SESSION ENDS**

## / HALL 5

09:00 – 10:00/

### **ESE Vladimir Adlivankine Research Prize competition**

*Led by Leo Tjäderhane*

09:00 – 09:20 /

**Comparison of continuous wave obturation and cold lateral condensation techniques in C1 and C2-type canals of 3D printed resin teeth instrumented with Reciproc Blue or Hyflex EDM**

*\*Karatekin AO, Keles A, Gençoğlu N*

09:20 – 09:40 /

**TGF- $\beta$ 1 levels and distribution in the root dentine of mature and immature human premolars**

*\*Ivica A, Deari S, Patcas R, Weber FE, Zehnder M*

09:40 – 10:00 /

**Influence of model system parameters on the sodium hypochlorite susceptibility of endodontic biofilms**

*\*Swimberghe RCD, Crabbé A, Braeckmans K, De Moor RJG, Coenye T, Meire MA*

10:00 – 10:30 /

### **Original Scientific Poster Prize - oral presentations**

*Led by Leo Tjäderhane*

10:00 – 10:15 /

**Anesthetic Efficacy of 2% Mepivacaine versus 4% Articaine for Inferior Alveolar Nerve Blocks in Patients with Symptomatic Irreversible Pulpitis in Mandibular Molars: A Randomized Clinical Trial**

*EL Marakby MF, Fouda MY, \*Bedier MM*

10:15 – 10:30 /

**The influences of Type 2 Diabetes on clinically normal dental pulp tissues**

*\*AlSamahi S, Milne TJ, Rich AM, Hussaini HM, Friedlander LT*

10:30 – 11:00 / **COFFEE BREAK**



11:00 – 11:45 /

## Original Scientific Poster Prize - oral presentations

Led by Leo Tjäderhane

11:00 – 11:15 /

### Effect of Premedication Using Diclofenac Potassium on Anesthetic Success of Articaine Buccal Infiltration in Mandibular Molars with Symptomatic Irreversible Pulpitis: A Randomized Placebo-Controlled Trial

Al-Rawhani AH, Wanees Amin SA, \*Gawdat SI

11:15 – 11:30 /

### Calibration for increased reliability in assessment of endodontic variables in panoramic radiographs

\*Sebring D, Jonasson P, Kvist T, Buhlin K, Lund H

11:30 – 11:45 /

### Assessment of used outcome measures in high-ranked endodontic journals according to a hierarchical model

\*Almutairi N, Björkner AE, Fransson H

11:45 – 12:30 /

## Education Prize - oral presentations

Led by John Whitworth

11:50 – 12:10 /

### Evaluation of 3D printed resin bicuspid in the reproduction of root canal anastomoses

\*Habib M, Nehme W, Zogheib C, Maalouf L, Tohme H, Naaman A

12:10 – 12:30 /

### Suitability of different tooth replicas for endodontic training: perceptions and detection of common errors in the performance of postgraduate students

\*Gancedo-Caravia L, Bascones J, Garcia-Barbero E, Arias A

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 16:00 /

## Clinical Poster Prize - oral presentations

Led by Gianluca Gambarini

14:30 – 14:45 /

### Guided endodontic treatment of multiple teeth with dentin dysplasia: a case report

*\*Krug R, Volland J, Reich S, Soliman S, Connert T, Krastl G*

14:45 – 15:00 /

### Oehler's Type III Dens Invaginatus Case Report

*\*Raad I, Tello G, Marín A, Cholico P*

15:00 – 15:15 /

### Internal repair of External Cervical Resorption: A case report

*\*Liapis D, Meire MA, De Moor RJG, De Bruyne MAA*

15:15 – 15:30 /

### Conservative management of large periapical lesion associated with mature and immature permanent teeth using conventional and regenerative endodontic procedures: a case report.

*\*Abo ElSeoud MR*

15:30 – 16:00 /

### Improved navigation system for endodontic surgery

*\*Morese A, Seracchiani M, Stefanelli L, De Angelis F, Di Carlo S, Gambarini G*

16:00 – 16.30 / **COFFEE BREAK**

16:30 – 18:00 /

## Clinical Video Prize - oral presentations

Led by Gianluca Gambarini

16:30 – 16:37 /

### Broken files removal - case report

*\*Jankowska A, Kuzminski M, Boltacz-Rzepkowska E*

16:37 – 16:44 /

### Intentional Replantation

*\*Martinez Cuellar NG*

16:44 – 16:51 /

### Next Generation Endodontics; Revitalization by CGF

*\*Ertürk E, Fazeli R, Turk T*

16:51 – 16:58 /

## **Apical surgery on upper left first molar with sinus elevation**

*\*Cho S, Nam J*

16:58 – 17:05 /

## **The use of PRF in endodontic microsurgery**

*\*Pires M, Cordeiro J, Meirinhos J, Rito Pereira M, Ginjeira A*

17:05 – 17:12 /

## **Volumetric 3D Rendering: Diagnosis and treatment planning**

*\*Isufi A, Dauti R, Plotino G, Terauchi Y*

17:12 – 17:19 /

## **Guided endodontics: Virtual endodontic access planning using two different workflows**

*\*Reich S*

17:19 – 17:26 /

## **Intentional replantation with an atraumatic extraction system in teeth with extensive cervical root resorption**

*\*Krug R, Krastl G*

17:26 – 17:33 /

## **New tips to remove fiber post**

*\*Choukroun R, Couvrechel C, Jakubowicz-Kohen B, Bocau C*

17:33 – 17:40 /

## **A new endodontic Navigation system: an endodontic surgery**

*\*Morese A, Seracchiani M, Stefanelli L, Di Carlo S, Testarelli L, Gambarini G*

17:40 – 17:47 /

## **A novel guided endodontics method for the treatment of a maxillary premolar with pulp canal obliteration and apical periodontitis**

*\*Torres A*

17:47 – 17:54 /

## **Management of a perforation of the lateral incisor, due to an external resorption caused by canine impaction**

*\*Ferraro N, Poli F*

17:54 – 18:00 /

## **Managing a calcified pulp chamber aided by ultrasonics and high resolution CBCT**

*\*Shehabeldin I*

18:00 / **SESSION ENDS**

## / HALL 6

09:00 – 18:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

**Variations of the morphology of mandibular first molars**

*\*Mercan MO*

09:18 – 09:36 /

**Three dimensional modeling and measurements of root canal anatomy in second primary mandibular molars: a micro CT study**

*\*El Hachem C, Nehme W, Abou chedid JC*

09:36 – 09:54 /

**CBCT and microscope examination in the diagnosis of anatomical extremes like root canal obliterations or resorptive processes**

*\*Kiefner P, Gliga A*

09:54 – 10:12 /

**Withdrawn**

10:12 – 10:30 /

**Evaluation of root canal morphology of mandibular first and second premolars using cone-beam computed tomography in a Turkish population**

*\*Ezentas N, Uzunoglu-Ozyurek E*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

**Maxillary second molar with two distinct palatal roots and canals: a case series and literature review**

*\*Zoya A*

11:18 – 11:36 /

**Three-dimensional non-destructive pulp-tissue visualization through micro-computed tomography imaging**

*\*Belladonna FG, Cavalcante DM, Carvalho MS, Silva EJNL, Zehnder M, De-Deus G*

11:36 – 11:54 /

**Endodontic infection-mediated systemic interactions pose global cardiometabolic risk**

*\*Niazi SA, Bakhsh A, Moyes D, Mannocci F*

11:54 – 12:12 /

**Evaluation of *S. mutans* and *C. albicans* adherence on various composite materials when exposed to bleaching agents**

*\*Eldeniz AU, Akbulut MB, Guneser MB*

12:12 – 12:30 /

**Withdrawn**

12:30 – 13:30 / **LUNCH**

## 13:30 – 14:30 / POSTER PRESENTATIONS / TRADE EXHIBITION

14:30 – 14:48 /

**Invasive Cervical Resorption (ICR), the use of 3D technology in diagnosis and treatment planning**

*\*Mashyakhy M, Shibani M, Gambarini G*

14:48 – 15:06 /

**Cleaning efficiency of three endodontic retreatment systems: an innovative CBCT study**

*\*Diemer F, Fisse J, Michetti J, Hamdan R, Georgelin-Gurgel M*

15:06 – 15:24 /

**Diagnostic accuracy of cone beam computed tomography used for diagnosis of apical periodontitis using histopathology of ex-vivo human jaws as reference standard**

*\*Kruse C, Spin-Neto R, Evar Kraft DC, Væth M, Kirkevang LL*

15:24 – 15:42 /

**Temperature rise on the external root surface during broken instrument removal**

*\*Mahran M, Hashem A, Saber S*

15:42 – 16:00 /

**The use of a new generation of Endodontic Simulators to improve the preclinical training.**

*Crigny Casadesus A, \*Simon SRJ*

## 16:00 – 16:30 / COFFEE BREAK

16:30 – 16:48 /

**Methodological quality of systematic reviews and meta-analyses in endodontics**

*\*Nagendrababu V, Pulikkotil SJ, Sultan OS*

16:48 – 17:06 /

**Behavioral analysis to evaluate the students' search strategies for a diagnosis in endodontics**

*\*Linás N, Cousson PY, Decerle N, Francois O, Hennequin M*

17:06 – 17:24 /

**Withdrawn**

17:24 – 17:42 /

**Design and evaluation of a mobile application of dentoalveolar trauma, pilot study**

*\*Tolozá R, Benadof D, Correa V, Cárdenas S, Jamett J, Flores V*

17:42 – 18:00 /

**Evaluation of the knowledge of final-year dental students on the use of antibiotics in Endodontics in Turkey**

*\*Arıcan Öztürk B, Çiftçioğlu E, Işık V, Karagöz-Küçükay I*

## 18:00 / SESSION ENDS

**/ HALL 7**

09:00 – 18:00 /

**Oral presentations on freely chosen subjects**

09:00 – 09:18 /

**Retrospective evaluation of intentional reimplantation cases**

*\*Güllü GS*

09:18 – 09:36 /

**Intentional Replantation, a new Light?**

*\*Freitas VN, Caetano L, Santiago F, Fernandes V, Garcez J*

09:36 – 09:54 /

**Endodontic microsurgery updated**

*\*Al Omari TMNT*

09:54 – 10:12 /

**Breaking limits in Endodontic microsurgery**

*\*Polovinchykov A*

10:12 – 10:30 /

**3D-guided endodontic micro-surgery**

*\*Gaffuri SG, Salgarello S, Tonini R, D'Ambrogio R, Mazzoleni F, Pasquariello F, Boschi G, Tagliabue R*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

**Apical surgery for lower molars : The bone window approach**

*\*Mallet JP*

11:18 – 11:36 /

**Intentional Replantation in the Implant Era**

*\*Alharbi MA*

11:36 – 11:54 /

**Surgical approach of large periapical lesions with application of L-PRF**

*Melo-Ferraz A, Ferreira S, \*Freitas VN, Fernandes V, Caetano L, Miller P*

11:54 – 12:12 /

**Management of invasive cervical resorption using combined heithersay's and laser assisted approach – case report**

*\*Ali S*

12:12 – 12:30 /

**Withdrawn**

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**



14:30 – 14:48 /

**Does technical retreatment have a high success rate?**

*\*Mer I*

14:48 – 15:06 /

**Influence of operator experience in Post-operative-pain in Endodontics**

*\*Pirani C, Iacono F, Arias A, Karami Shabankare A, FitzGibbon RM, Zamparini F, Gandolfi M, Prati C*

15:06 – 15:24 /

**Post-operative quality of life following root canal treatment performed with different shaping and root canal filling techniques: an observational study.**

*\*Brondino A, Brasoveanu M, Multari S, Carpegna G, Berutti E, Pasqualini D*

15:24 – 15:42 /

**Outcome of pulpotomy using calcium silicate based material in symptomatic mature permanent teeth with carious pulp exposure: 2 years results**

*\*Taha NA, Alkhatib HO*

15:42 – 16:00 /

**Full pulpotomy and endocrowns in permanent teeth during one chairside appointment: a cohort study**

*\*Munoz-Sanchez ML, Decerle N, Linas N, Cousson PY, Hennequin M*

16:00 – 16:30 / **COFFEE BREAK**

16:30 – 16:48 /

**Withdrawn**

16:48 – 17:06 /

**Paradigm shift in Vital pulp therapy; Current clinical evidence**

*\*Alshayban MU*

17:06 – 17:24 /

**Quality assessment of systematic reviews published in endodontic journals**

*\*Mishra L, Singh NR*

17:24 – 17:42 /

**The validity of systematic reviews to answer clinical questions: Introduction of AMSTAR 2, PRISMA, and GRADE systems**

*\*Salem Milani A, Rahimi S, Frough Reyhani M*

17:42 – 18:00 /

**Patient Reported Outcome Measures in Endodontics using a mixed methodology following treatment by postgraduate students in a UK dental hospital**

*\*Jacobs RP, Jarad FD*

18:00 / **SESSION ENDS**

## PROGRAMME

### / HALL 1

08:45 – 09:00 /

**Prize presentations: the winners of the following prizes will be presented with a certificate by the Chairs of the Research, Education and Clinical Practice Committees: ESE Wladimir Adlivankine Research, Education, Original Scientific Poster, Clinical Poster and Clinical Video**

/ **Session chair:** *Hanjo Hecker*

09:00 – 09:45 /

#### **The future - irrigants and irrigant agitation**

*Christos Boutsoukis*



##### **Abstract**

Irrigation is an important part of root canal treatment and a very popular topic in the endodontic literature. Over the years, a vast amount of research and manufacturing efforts have been concentrated on the development of new irrigants and elaborate irrigation techniques, in order to supplement or even replace conventional syringe delivery of sodium hypochlorite. However, the best method to deliver and agitate the irrigant so that it reaches all the anatomic intricacies of the root canal system is still under debate and the ideal irrigant has yet to be found. Furthermore, modifications in the access cavity design and new instrumentation strategies bring additional challenges to root canal irrigation.

##### **Aims**

The aim of this lecture is to provide an overview of the current evidence on root canal irrigation and to discuss possible future directions.

##### **Objectives**

- Outline the main challenges for root canal irrigation;
- Review the advantages and limitations of widely used irrigants and irrigant agitation methods;
- Discuss emerging alternatives and possible future directions for research and clinical practice.

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09:45 – 10:30 /

#### **The future - supplementary methods of eliminating bacteria from root canals**

*Anil Kishen*



##### **Abstract**

Endodontic technologies and biomaterials have witnessed substantial advances in the last decade. In spite of these advances, some of the integral challenges in endodontic treatment continues to persist. Nanoparticle guided therapeutics that predictably disinfect the infected root canal system, reverse disease-mediated dentin matrix changes and regulate post-treatment healing have the potential to transform current concepts for a major paradigm shift in root canal treatment.

## Aims

This lecture aims to cover the fundamentals and applications of engineered nanoparticles in the treatment of teeth with apical periodontitis.

## Objectives

- Will learn the basics of engineered bioactive nanoparticles;
- Will learn the mechanisms by which engineered bioactive nanoparticles reverse disease-mediated dentin matrix changes;
- Will learn the role of engineered bioactive nanoparticles in root canal disinfection.

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10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair:** *Henning Bahnemann*

11:00 – 11:45 /

## The future - root canal shaping

*Tina Rödiger*



## Abstract

Root canal shaping with nickel-titanium rotary instruments is an important step of endodontic treatment to create space for delivering irrigants and subsequent obturation. Current NiTi systems allow shaping of even severely curved root canals with maintenance of the original path of the canal and procedural mishaps are less likely compared to stainless steel instruments. Shaping procedures should also aim to preserve radicular dentine and to retain structural strength, thereby preventing vertical root fractures and promoting long-term function of the tooth. This lecture will provide an overview of current shaping strategies and evaluate the effect of specific designs on shaping abilities and fracture resistance of root canal instruments. Finally, potential negative outcomes of instrumentation such as development of dentinal microcracks are discussed and an outlook on future trends for cleaning and shaping of the root canal system is presented.

## Aims

This lecture aims to critically review the current literature on clinical procedures and instruments for root canal shaping.

## Objectives

- Describe the basic concepts of root canal instrumentation;
- Evaluate the advantages and disadvantages of contemporary technologies and instruments;
- Discuss the potential risk of development of dentinal defects after root canal preparation;
- Present ideas of future techniques for root canal cleaning and shaping.

I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation - VDW; Dentsply Sirona.

11:45 – 12:30 /

## The future - the optimum dimensions of the apical preparation

Jose Siqueira Jr.



### Abstract

The main purposes of chemomechanical preparation are to clean, disinfect and shape the root canal. This can be regarded as the most important phase of the endodontic treatment, because instruments and irrigants promote the removal of bacteria and potential substrate from the main canal, which are the primary cause of apical periodontitis. The ideal size of apical preparation is one of the most controversial issues in Endodontics. Ideally, chemomechanical procedures should be considered complete when the canal is enlarged to instrument sizes that are compatible with the root anatomy and size, and sufficiently large to be safe and antibacterially effective. Microbiological studies have revealed that the larger the apical preparation size of infected canals, the greater the intracanal bacterial reduction. Studies have also shown that the larger the apical preparation size, the cleaner the apical canal. Larger preparations are also associated with improved outcome of the treatment of infected teeth with apical periodontitis. However, a great challenge for clinicians is to find a tradeoff between enlarging the canal sufficiently to improve cleaning and disinfection, but not too much to avoid weakening the tooth structure. Strategies and perspectives for optimum apical preparation will be discussed.

### Aims

To critically review the literature for the ideal dimensions of apical preparation and present future perspectives.

### Objectives

- Understand the importance of enlargement to achieve the goals of chemomechanical preparation;
- Describe the scientific evidence about the effects of apical enlargement on root canal cleaning and disinfection;
- Discuss the potential risks of large preparations;
- Present perspectives for optimum apical preparation.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

/ **Session chair:** *Johannes Klimscha*

14:30 – 15:15 /

## **The future - NiTi alloys**

*David Sonntag*



### **Abstract**

Blue-Wire, Gold-Wire, M-Wire, R-Phase, T-Wire are these different alloys or just different names- or is it one NiTi alloy that has been heat treated differently? Manufacturers describe wordily - but at the same time give very little information about products. The Naval Ordnance Laboratory, which was closed in 1997, developed the fascinating Nitinol in 1958. The possibilities of using nickel titanium are far from being exhaustively tested. Not only in dentistry and aerospace or car industry new uses are being discovered until today. The aim of the lecture is to shed some light on the facts, to separate assumptions from facts and to increase the basic understanding of rotary or reciprocating files used on daily basis. For clinical application alloys are inevitably associated with heat treatment and geometry. In the lecture, existing file systems will be discussed and new perspectives on possible future developments will be given.

### **Aims**

Present an overview of current alloys used in existing NiTi files and discuss future directions for alloy/instrument combinations.

### **Objectives**

- To give an overview of existing combinations of alloys and instruments;
- Working out a sensible combination of alloy, geometry and field of application;
- To give an insight on future developments.

**I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation - Brasseler, Germany / Dentsply Sirona, Switzerland/ VDW, Germany**

15:15 – 16:00 /

## **The future - multiple or single cone canal filling**

*Franklin Tay*



### **Abstract**

Lateral condensation of gutta-percha using multiple cones was the original obturation technique used when gutta-percha cones were developed, and it continues to be the primary technique taught to undergraduate students in dental schools in Europe and the United States. The single cone canal filling technique that uses only the master cone has gained popularity with the advent of nickel titanium rotary instrumentation systems, especially by employing larger cones with larger taper sizes that match the geometry of the rotary systems. The single cone technique does not require the use of accessory cones, thus reducing the time spent in root canal filling. This technique enables an easier and faster canal fill. However, aspects such as obturation quality, apical leakage and bacterial penetration of the single cone technique have generally been regarded as similar to, or lower than other canal filling techniques. In the present presentation, the pros and cons of the two canal filling techniques will be reviewed. This will be followed by looking into the future, examining the possibility of futuristic single cone filling techniques that utilizes a material that expand with water sorption,

and an experimental root canal sealer introduction technique that is inspired by the apical negative pressure technique utilized in root canal irrigation. Irrespective of any techniques to be adopted for future clinical use, it is important to emphasize the significance of material biocompatibility and durability. The audience will travel in the time channel from the future back to the past, and look at the two episodes in the history of endodontics that spanned over 10 years each, in which inadvertent canal filling material design had led to clinical problems that resulted in the retraction of the materials from the market.

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16:00 – 16:30 / **COFFEE BREAK**

/ **Session chair:** *Thomaas Weinberger*

16:30 – 17:15 /

## **The future - hydraulic calcium silicate cements**

*Josette Camilleri*



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17:15 – 18:00 /

## **The future - assessing residual tooth tissue for restoration The relationship between endodontic treatment need, tooth restorability, endodontic outcome and tooth survival**

*Francesco Mannocci*



### **Abstract**

The assessment of tooth restorability is a delicate decision-making process which includes a number of often neglected aspects. In this lecture we will present the results of recently published and “in press” clinical trials assessing the effect of psychologic variables on the decision making on tooth restorability, the association between pulp preservation and tooth survival, and the effect of the residual volume of tooth structure on the survival of endodontically retreated teeth. The final results of a retrospective trial on the ability of the Dental Practicality Index (DPI) developed by Dawood and Patel, to predict the survival of endodontically treated teeth will also be presented.

### **Aims**

The aim of this lecture is to highlight common pitfalls in the assessment of tooth restorability and prediction of tooth survival and to help the clinician in making choices on tooth restorability and the need for root canal treatment based on clinical research data.



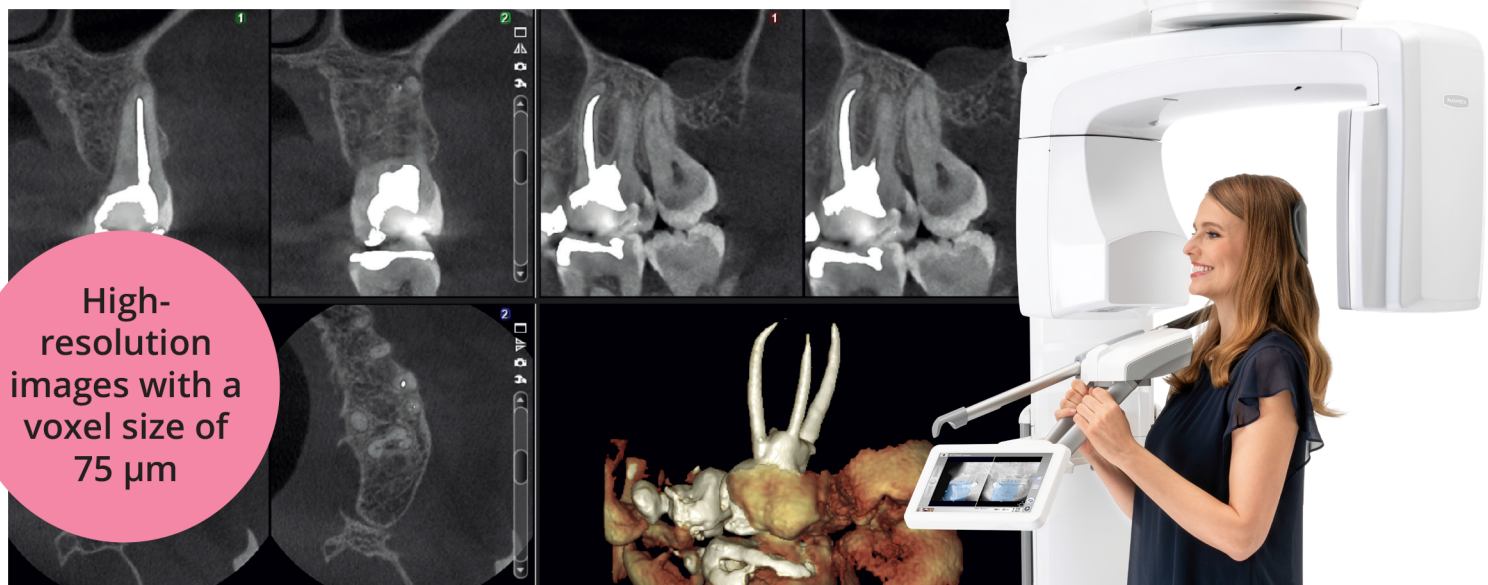
## Objectives

The aim will be achieved by allowing the delegates to correlate the new findings presented on tooth survival with published and in press Cone Beam Computed Tomography (CBCT) data on the outcome of endodontic treatment and pulp protection procedures. At the end of the lecture the delegates will also be familiar with the use of the DPI Index.

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18:00 / SESSION ENDS

## Planmeca endodontic imaging – a new era in precision



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## / HALL 2

/ **Session chair:** Jens Emmelmann

09:00 – 09:45 /

### **New system for classifying tooth, root and canal morphology**

*Hany Mohamed Aly Ahmed*



#### **Abstract**

Knowledge of tooth, root and canal morphology is a prerequisite for effective root canal treatment. With current advances in technology and increasing body of knowledge on root and canal morphology, the deficiencies of the existing systems used for classifying root canal morphology have become more apparent. A new system for classifying the root and canal morphology was proposed recently, which provides detailed information on tooth notation, number of roots and root canal configuration in addition to accessory canals and anomalies. This lecture aims to present an overview of the new system, and its potential applications in education, research and clinical practice.

#### **Aims**

- To present an overview of the new system for classifying tooth, root and canal morphology;
- To discuss potential applications in education, research and clinical practice;
- To present two years of experience with the new system - advantages and challenges;
- To discuss future plans for universal adoption.

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09:45 – 10:30 /

### **The root apex - the complexities of apical canal anatomy**

*Ashraf ElAyouti*



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10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair:** Kurt Ebeleseder

11:00 – 11:45 /

### **The association of clinical signs and symptoms with specific endodontic microorganisms**

*Brenda P Gomes*



#### **Abstract**

Bacteria and their by-products are the primary cause of pulpal and periradicular pathologies; of the development of signs and symptoms of endodontic origin; of the acute manifestations during or after endodontic treatment, known as flare-ups; and of the failure of endodontic treatment. Bacteria possess virulence factors including: a)

their structural cell components, such as lipopolysaccharides (LPS; i.e. endotoxin), present in Gram-negative bacteria, and lipoteichoic acid (LTA), present in Gram-positive bacteria, which can cause indirectly tissue injury by activation of the immune response; b) their metabolism products, which can cause direct damage to pulp tissue. Although no absolute correlation has been demonstrated between any specific type of bacterial species and the aetiology of pulpal and periapical alterations, strong evidence suggests that Gram-negatives are involved in the development of clinical features of acute periapical inflammation such as pain, swelling and exudation, as well as with larger size of periapical radiolucent area. On the other hand, Gram-positives may be associated with resistance to intracanal medicaments, may play a major role in biofilm formation and may provide bacterial resistance to antibiotics or chemical substances. Nevertheless, the combinations between bacteria, particularly between Gram-positives and Gram-negatives, are more potent in the development of clinical signs and symptoms than the single strains. The endodontic treatment should reduce the levels of microorganisms and their virulence factors in the root canal system in order to re-establish the health of the periapical tissues. It is concluded that a better understanding of the association between bacteria and their virulence factors with the clinical and radiographic aspects presented by the patients is important to the establishment of appropriate therapeutic procedures, which will lead to a more predictable outcome of the endodontic treatment. [Supported by FAPESP (15/23479-5, 17/16516-7); CNPq (308162/2014-5) & CAPES]

## Aims

The aim of this lecture is to discuss the association of bacteria and their virulence factors with some endodontic signs and symptoms and with several aspects related to the endodontic treatment outcome.

## Objectives

- Discuss the role of bacteria in the endodontic disease;
- Discuss the virulence factors of Gram-negatives and Gram-positives;
- Discuss the association of virulence factors such as LPS and LTA with the development of clinical features; with the resistance to disinfectants, intracanal medicaments and antibiotics; and with the biofilm formation;
- Discuss the role of combinations of bacteria in potentiating the development of clinical signs and symptoms;
- Discuss the role of the endodontic treatment in reducing the levels of microorganisms and their virulence factors in the root canal system.

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11:45 – 12:30 /

## Pulp revitalization procedures in immature and mature teeth

Tugba Turk



## Abstract

Regenerative endodontic therapy is a biologically driven procedure designed to replace the damaged tissue including dentin, root structures, as well as cells of the pulp-dentin complex. Endodontic science today benefits from the latest technologies and uses all the evidence-based knowledge to define novel clinical principles and practices aiming to mimic the nature itself like never before. Parallel to the advancements in the field of tissue engineering and regenerative endodontics the strategies in pulp regeneration are improved.

## Aims

The aim of the current lecture is to discuss the revitalization procedures both for mature and immature teeth based on personal case reports with long-term follow-up. The advantages and the limitations of extending the indication and scope of revitalization procedures to mature teeth will also be discussed.

## Objectives

- To review the importance of pulp-dentin complex regeneration;
- To review the current literature in the pulp revitalization procedures;
- To review different clinical cases and regeneration protocols;
- To review the future perspective for revitalization of both mature and immature teeth.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

/ **Session chair:** *Peter Brandstätter*

14:30 – 15:15 /

## **Working length determination: dynamic and three-dimensional**

*Lucila Piasecki*



### **Abstract**

A proper apical limit for cleaning, shaping, and filling procedures has been directly correlated with the success of endodontically treated teeth.

Current literature supports the use of electronic apex locators as the preferable method for intra-operative working length determination because they are more reliable in locating the apical constriction. However, in a clinical scenario, the subsequent evaluations of the apical limit position are usually performed by using periapical radiographs. Disparities and challenging situations might be related to the limitations of each method, anatomic complexities, and the dynamic nature of the working length throughout the endodontic procedures.

Recently, new software and rendering tools have been introduced to enhance the visualization of the root canals in cone-beam computed tomographic (CBCT) scans. Thus, for the cases presenting with a diagnostic CBCT scan, the apical anatomy and trajectory of the root canals can be analyzed in three dimensions and a pre-operative working length can be estimated.

Additionally, the trajectory of the root canals is modified by the shaping procedures, which might result in small variations in their total extension. Thus, monitoring and adjusting the working length is essential to maintain the apical limit within dentinal walls throughout the Endodontic treatment. Although the incorporation of apex locators into endodontic motors aims to control the apical limit of preparation automatically, their functionality and accuracy are still controversial.

### **Aims**

This presentation aims to discuss the determination of the apical limit for the endodontic procedures from a three-dimensional and dynamic perspective, as well as the advantages and limitations of different methods for working length determination.

## Objectives

- Revise the concepts of apical anatomy and their correlation with apical limit determination;
- Discuss the three-dimensional and dynamic aspects of the working length throughout the Endodontic procedures;
- Limitations and potential benefits of electronic devices and dedicated software for working length determination;
- Correlate some of the research outcomes to the clinical scenario.

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15:15 – 16:00 /

## **Endodontic screening for patients with cardiovascular disease - presentation of a consensus protocol**

*Elisabetta Cotti*



### Abstract

One controversial issue in the relationship between oral care and cardiovascular diseases is how and whether to manage oral infections prior to cardiovascular surgery or other cardiovascular invasive procedures. To date, the guidelines of the US and EU cardiology and cardiac surgery associations have expressed incomplete and inconsistent information on the issues. From a systematic literature review, it became clear that a consensually validated protocol for the reproducible dental screening of patients awaiting cardiac interventions was never created and that the treatment options to be provided, their prognosis and timing in relation to the condition of patients had never been considered. A consensus work was then completed by a panel of experts from six dental, cardiology, and cardiac surgery Italian scientific societies on the development of a consistent strategy to adopt when screening patients for dental/periodontal infections, and on the feasibility of providing dental treatment before cardiovascular surgical procedures depending on the physical conditions of the patient.

### Aims

The aim of this lecture is that the protocol created following the consensus is discussed since it may become a model to be used by the Heart and Dental teams, in Europe in the pre-interventional preparation of patients awaiting cardiovascular interventions.

### Objectives

The discrepancies in the guidelines, the motivation behind the creation of the consensus, the results of the consensus in terms of screening protocol, definition of dental foci, definition of the average conditions of patients waiting for cardiac surgery will be explained.

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16:00 – 16:30 / **COFFEE BREAK**



/ **Session chair:** *Tomas Kupec*

16:30 – 17:15 /

## Treatment planning for post-treatment disease

*Hani F. Ounsi*



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17:15 – 18:00 /

## Tips and tricks during root canal retreatment

*Mohammad Hammo*



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18.00 / **SESSION ENDS**



Dr. Chuck Goodis, Endodontist  
CEO and Founder EdgeEndo

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## / HALL 3

09:00 – 12:30 /

### **Symposium: Deep carious lesions and vital pulp therapies**

*Led by Hal Duncan*



09:00 – 09:35 /

### **Caries today: challenges, opportunities and the reparative response**

*Hal Duncan*

#### **Abstract**

Caries prevalence remains high throughout the world, with the burden of disease increasingly affecting older and socially disadvantaged groups. If left untreated, caries will advance through dentine stimulating pulpitis and eventually pulp infection and necrosis; however, if conservatively managed pulpal recovery occurs even in deep carious lesions.

If as a profession, we are to develop new minimally-invasive solutions, an applied understanding of pulpal inflammation and repair processes is critical. During this presentation we will discuss the recently published ESE position statement of 'Deep Caries and the Exposed Pulp' and consider;

- What is the relative role of the dentine matrix and pulp cells themselves in promoting pulpal repair mechanisms in the damaged pulp? - Furthermore, which repair processes (e.g. tertiary dentinogenesis) require better understanding and which others offer opportunities for therapeutic targeting? - What type of study do we have and what sort of research needs to be carried out to develop our translational understanding? - Are next generation solutions a pipe dream or present realistic opportunities?

#### **Aims**

To understand the current epidemiology as well as the pulp-dentine response to caries;  
Identify attractive targets in the pulp for improving diagnosis and repair processes.

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09:35 – 09:45 /

### **Discussion and questions**

09:45 – 10:20 /

### **The diagnostic conundrum of treating the deep carious lesion**

*Phillip Tomson*



#### **Abstract**

Caries is a microbial biofilm-induced disease of the hard tissue of the tooth, which is promoted and maintained by a dietary supply of fermentable carbohydrates. Once it breaches enamel it encounters a unique mineralised connective tissue that is composed of two integrated constituents - the pulp (well innervated gelatinous soft connective tissue with a rich vasculature) and the dentine (outer casing of mineralised tissue). Physiologically they should be considered as one, but in order to develop an accurate diagnosis to provide a platform to develop a treatment strategy, they should be considered separately. Caries is a common disease but making an accurate diagnosis of the precise disease state for both tissues can be challenging even for the most skilled clinician. Our diagnostic tools are primitive by modern day healthcare standards and our terminology is perhaps inaccurate preventing us from adopting minimally invasive strategies which we strive for today in the emerging biological

era of dentistry. With a deepening biological understanding of the disease states of the dentine-pulp complex we are now questioning established dogma which may result in a significant change in how we manage even advanced disease of the dentine-pulp complex.

## Aims

The aim of this lecture is to discuss the disease states of the dentine-pulp complex, question established dogma and look to future diagnostic and treatment strategies of this unique connective tissue.

## Objectives

- Review the physiological processes of the dentine-pulp complex in health and disease;
- Outline diagnostic terms used to describe disease states of the dentine-pulp complex;
- Discuss potential visions for the future for the treatment of more advanced disease.

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10:20 – 10:30 /

## Discussion and questions

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:35 /

## How much is enough when treating the deep carious lesion?

Lars Bjørndal



## Abstract

Understanding of caries pathology and pulp inflammation is crucial for determine best treatment option. Inflammation is a two-edged sword comprising the platform for beneficial mineralization as well as unwanted pulp necrosis followed by bacterial infection and progression of apical inflammation.

Research has shown that a suggested treatment may vary when the deep carious lesion is examined, reflecting that transportation of research findings is a slow process but may also indicate that optimal evidence is still lacking. However, clinical randomized trials have emerge perhaps making treatment decision more easier. In the first part of the lecture, a brief journey comprising an updated understanding of carious pathology will be detailed.

In the second part suggested guidelines for deep carious handling based on published clinical data, will be presented including the exposed pulp. E.g. quite often it is unclear from clinical pulp capping studies, whether the procedures were carried out due to an unexpected event, or whether the procedure was planned, moreover the depth of the caries lesion is seldom specified, which reflects degree of pulp inflammation.

It is no wonder that there appears to a treatment variation within the general practitioners environment for patients having a deep caries lesion, - some perform pulp-capping or root canal treatment, and other prefer a less invasive excavation approach, aiming to avoid pulp exposure. What does the best available evidence tell us for the performance of the treatment of deep caries lesions?

## Aims

A research based update on the treatment of deep caries lesion.

## Objectives

- Understanding caries pathology;
- Understanding relative importance of evidence;
- Clinical treatment outcome of deep caries.

I declare that I have NO proprietary, financial, or other personal interest of any nature or kind in any product, service, course, and/or company, or in any firm beneficially associated therewith, that will be discussed or considered during the proposed presentation.

11:35 – 11:45 /

## Discussion and questions

11:45 – 12:20 /

## Managing the vital pulp when treating the deep carious lesion

*Stéphane Simon*



## Abstract

Prognosis of pulp capping treatment is highly dependent of two factors. (1) inflammation status of the pulp to be capped, and (2) the quality of mineralized bridge synthesized by the pulp in contact with the biomaterial. Pulpitis is a progressive disease and it is clinically very difficult to decipher the limit between healthy tissue from inflamed one. For years, Pulp healing process research and clinical outcome have been focussed on biomaterials' bioactivity. Nevertheless, in tissue engineering, inflammation process remains the first step of healing. It should then make sense to better consider this physio-pathological disorder to better understand why treatment can fail and how clinicians could improve the success. Biomaterials development of the last decade have raised to the new family of bioceramics which were developed as stimulators of mineralized bridge secretion. The research for the next generation of products should consider a new bioactivity of these filling and capping materials for a better control of residual pulp inflammation after partial or full pulpotomy.

## Aims

The aim of his lecture to describe the two types of pulp inflammation and to demonstrate why and how they both act in the healing process of pulp under deep carious disease.

## Objectives

The objective is to use both of clinic and bench research to show why the clinician must be aware of inflammation disease to better consider the factors to improve the clinical outcome. At the end of this lecture, attendees will be able to differentiate the good and the bad inflammation and to adapt their clinical approach to consider the inflammation not only as a disease, but also as an opportunity.

I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation - Dentsply Sirona, Septodont, Produits Dentaire SA.

12:20 – 12:30 /

## Discussion and questions

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

**14:30 - 18:00 /**

## **Symposium: Education**

*Led by John Whitworth*

*Education Symposium, including presentations on educational video production, supporting students in transition to practice, technology in dental education and opportunities to get involved with ESE education*

**14:30 – 15:15 /**

### **How to produce high quality videos for online teaching and technology enhanced learning**

*Mads Dahl*



#### **Abstract**

This interactive talk will illustrate how Video and multimedia content is no longer an option for the few, it's a must for the health science teacher that wants to succeed with technology enhanced learning, flipped classroom pedagogic and the Social Media (SoMe) generation. The time students use on online videotutorials and introductions increase every year and health science educators need skills on how to successfully produce and implement video content in an curriculum. Made and used in the right way, videos can be an effective teaching modality providing flexible learning opportunities. However, development of videos might challenge the educators unfamiliar with the media and I will demonstrate a video app and teach some basic techniques on how to make quality videos. App: Videoshop - Video Editor. Jajijujejo Inc.

#### **Aims**

To demonstrate usage of videos and mobile technology in health science education.

#### **Objectives**

Theoretical knowledge about how to design video content and implement it successfully with use of integrated course design model and SoMe in an online curriculum. Further, the participants will get hands-on experience with shooting and editing their own educational video and get inspiration for distribution through different sources.

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**15:15 – 16:00 /**

### **The transition to independent practice**

#### **How can dental education ameliorate the transition shock?**

*Peter Musaeus*



#### **Abstract**

This talk examines how the dental novice best can make a successful transition and learning trajectory from dental school to independent practice. This requires a transfer of what students have learned in one context

(e.g. the university) to another (e.g. independent practice). Learning transfer is notoriously hard to find evidence for in educational science. How can we ever know that what novices in practice become able to do, was truly a result of the teaching we gave them at university/dental school? Arguably a gulf exists between what is taught at dental school as evidence-based versus how dentistry including endontology is practised in the workplace. Although dental students get exposed early to patients, simulation training, and real patient care in general practice, and endodontology, transition nevertheless seems to be a problem for novices in dentistry. This is not unique to dentistry, but common to the allied health sciences (medicine, nursing, and psychology etc.). Questions addressed include: What causes some novice dentists to cope poorly with the transition? Which aspects of student/novice learning are important to consider when describing the problem of learning transfer?

## Aims

To give insights into problems in teaching for learning transfer.

## Objectives

In giving insights into the problems in teaching for learning transfer, this talk will look at research literature, dental curricula, literature and teaching tips. The objective will be to show how we can organize student learning to best overcome problems of transition from dental school/university to independent dental practice.

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**16:00 – 16:30 / COFFEE BREAK**

**16:30 – 17:00 /**

## **The Development of the Endodontics Complexity Assessment Tool (E-CAT) - A case-difficulty assessment app for endodontic education.**

*Obyda Essam*



## Abstract

Determining the level of complexity of endodontic cases is a very subjective matter and currently lacks evidence backed format. Although some paper-based complexity assessment forms exist (e.g. the American Association of Endodontists (AAE) form, the Dutch Endodontic Treatment Index and the England RCS restorative dentistry index of treatment need), little evidence based research has been undertaken to assess the validity and reliability of these tools. Despite their potential benefits, they are found to be time consuming in the digital age.

The Association for Dental Education in Europe (ADEE) and the European Society of Endodontology (ESE) undergraduate competency guidelines refer to the graduating European dentist as being competent in the management of 'uncomplicated' anterior and posterior teeth, yet neither clearly defines what is meant by uncomplicated.

This presentation will cover the development of the Endodontic Complexity Assessment Tool (E-CAT). The aim was to develop an evidence based, reliable and user-friendly digital assessment tool to define the term "uncomplicated" and help GDPs assess and classify complex non-surgical root canal treatments (NSRCT).

## Aims

This lecture will cover the development of the Endodontic Complexity Assessment Tool (E-CAT). It will outline the methodology of the research including the literature review findings, the iterative development process, the evaluation of the tool validity in addition to inter- and intra-user reliability. Future research areas will also be discussed.

## Objectives

- Highlight the benefits and limitation of endodontic case assessment forms;
- Describe the gap in the literature concerning the existing case assessment forms;
- Discuss the development of the E-CAT;
- Present the results of the evaluation of the E-CAT;
- Discuss the benefits and limitations of the E-CAT;
- Highlight potential future research areas.

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17:00 – 17:30 /

## Digital workflow in endodontic skills training 3D printing in dental education

Marcel Reymus



## Abstract

3D printing offers new unsuspected possibilities for the cost-effective manufacturing of custom-specific objects in small series. By using special software applications, it is possible to transfer DICOM-data to a printable file and edit it in order to create a specific model for educational purposes. 3D printing offers dental schools the possibility of producing individual solutions for their endodontic curricula independently from commercial manufacturers. By sharing their expertise and exchanging their respective models dental schools could tremendously profit from each other and provide more sophisticated training possibilities for the pre-clinical setting.

## Aims

This lecture should familiarize the attendees with several software solutions for 3D printing and make them aware of the potential merits of this technology for dental education.

## Objectives

- To introduce the attendees to several software applications and different 3D printing techniques;
- To share a suitable workflow for the production of educational models;
- To present various models for endodontic training.

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17:30 – 18:00 /

## ESE education workstreams – how you could get involved and ESE education grants – how could we do better?

John Whitworth



## Abstract

The ESE Education and Scholarship Committee has expanded its work to include: 1. Revision of undergraduate curriculum guidelines. 2. Revision of guidelines for 3 year postgraduate speciality training programmes. 3. Postgraduate speciality programme accreditation. 4. Re-accreditation of postgraduate training programmes. 5. Biennial education symposia. 6. Education Grants and Prize. 7. Collaboration with ADEE to develop a library of



teaching cases. There are opportunities for colleagues to collaborate and to consider how best to utilize our education funding. Come along and see how you might get involved.

## Aims

To present the education work streams of the ESE and how individuals and institutions may become involved.

## Objectives

Presenting current work streams and opportunities for engagement.

I declare that I have NO proprietary, financial, or other personal interest of any nature or kind in any product, service, course, and/or company, or in any firm beneficially associated therewith, that will be discussed or considered during the proposed presentation.

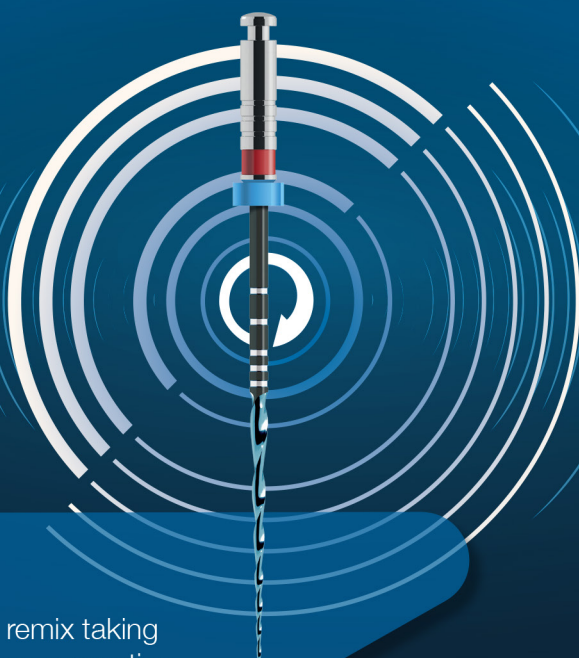
18:00 / SESSION ENDS



150  
YEARS

## VDW.ROTATE™ NiTi Root Canal File

The remix taking  
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### 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!

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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

## / HALL 4

09:45 - 10:30 /

### Carestream Dental lecture CBCT in endodontics. Why and when?

*Roberto Carlos Aza Garcia*



#### Abstract

Conventional periodical radiography is an essential part in the diagnosis, treatment plan and follow-up in endodontics. However, this type of intra-oral imaging system have limitations due to its bidimensionality. Cone Beam Computed Tomography (CBCT) was introduced in the past decade in the area of 3D radiological diagnosis. Due to the limitations of conventional 2D periapical radiography, the applications of CBCT in all areas of dentistry has been growing. However, not all CBCT units have the same characteristics, and therefore, not all are suitable for its use in endodontics. Due to the anatomical structures involved, endodontics require the highest level of image quality and resolution to provide a high quality diagnostic image, that allows to make a precise diagnosis and treatment plan. CBCT should not be used routinely, only when the benefits to the patient outweigh the potential risks. The recommendations for the use of CBCT in Endodontics are perfectly determined by the ESE (European Society of Endodontology), AAE (American Association of Endodontics) and the EAMDFR (European Academy of Dentomaxillofacial Radiology). Limited FOV CBCT units are recommended for most endodontic cases, because they provide smaller voxel size, higher spatial resolution, less radiation dose to the patient and shorter volumes to be interpreted.

#### Aims

The lecture will discuss the different applications of CBCT in endodontics with clinical cases, and also the latest advances in CBCT imaging, as the integration of CBCT with Intraoral Scanner, for its use in Endodontics.

#### Objectives

- Determine which CBCT units are suitable for endodontics;
- ALARA Principles;
- Applications of CBCT in endodontics;
- Interaction with Intraoral Scanners.

This lecture and speaker is sponsored by Carestream Dental

10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair** / *Daniel Černý*

11:00 – 11:45 /

### VDW lecture

### How to scout unscoutable canals predictably and efficiently

*Gianluca Plotino; Nicola Maria Grande*

#### Abstract

After access to the root canal system and localization of the root canal orifices, the most difficult step during endodontic treatment is the need to scout the root canals and to create a safe and predictable glide path. In clinical practice, 80-85% of the root canals in primary treatments may be defined as standard cases, as they present a natural glide path that may be successfully scouted from the beginning and easily enlarged with

a single-file basic preparation technique using a reciprocating heat-treated instrument. The remaining 15-20% of the canals may be defined as complex, as they present anatomical variations that make the scouting procedures the most delicate and challenging phase of the entire treatment. This phase requires skills and clinical experience for its correct management, but is often time-consuming and frustrating. In fact, complex cases in endodontic primary treatments mainly depend on the initial permeability of the canals to their terminus and on the presence or absence of a natural glide path. Following these considerations, the present lecture will analyze the different possible clinical scenarios, first considering the cases in which an initial manual scouting is successful to negotiate the canal to its terminus, then describing why in some cases there are difficulties to the negotiation caused by coronal or apical impediments and how to clinically deal with these situations predictably, safely and efficiently, using the ideal instruments for each clinical situation. In fact, the use of a small reciprocating glide path file and the need to hybridize the techniques will also be described to solve these clinical cases with the most complex and particular root canal anatomy. Clinical procedures on how to manage canals with difficult scouting will be clearly explained, to simplify these procedures and ensure more predictable, gold standard endodontic treatments.

**This lecture and speakers are sponsored by VDW**

11:45 – 12:30 /

## **Coltène / Micro Mega Lecture 2**

**A new approach for the instrumentation of challenging canal systems.**

**A dedicated sequence for a dedicated technique**

*Antonis Chaniotis*



### **Abstract**

The internal anatomy of human teeth often consists of a highly complicated network of multi-planar curved and anastomotic canals, as seen in studies of root canal anatomy. Reaching the biological and design objectives of root canal instrumentation in severely curved or complicated canal systems can be extremely challenging for all instrumentation systems and techniques.

### **Aims**

The aim of this lecture is to introduce a novel technique called tactile controlled activation technique (TCA) with Controlled memory and EDM files for the instrumentation of challenging root canal systems.

### **Objectives**

- Understand the design and biological objectives of canal instrumentation;
- Understand the anatomical complexity of the root canal systems;
- Introduce a novel instrumentation approach for the management of complicated canal systems.

**I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation – Coltene.**

**This lecture and speaker is sponsored by Coltène / Micro Mega**

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

/ **Session chair:** *Roman Blahuta*

14:30 – 15:15 /

## **Eighteenth Medical lecture 2**

### **3-D obturation of root canal systems. Does it really matter?**

*Massimo Giovarruscio*



#### **Abstract**

It is a commonly accepted fact that sterile canals, if perfectly sealed at their coronal extents, do not need to be filled to achieve endodontic treatment success. In all classic research study, thus proving that endodontic disease states do not occur without bacterial etiology. No bugs means no disease; so why do we fill canals? The biologic rationale for 3-D obturation (root canal systems filled to their full apical and lateral extents) is to buttress our biochemical cleaning procedures because root canal systems can present with levels of anatomic complexity that defy definitive treatment. If I fail to achieve sterility in a given root canal system, I may still achieve successful healing of periradicular pathosis if infectious remnants are entombed by the sealer and gutta-percha. A contemporary 3-D obturation system down pack will be showed. The latest modern tools provide easy and predictable results in root canal treatment.

#### **Objectives**

- Understand the importance of diagnosis and treatment planning;
- Provide an understanding of the biology surrounding endodontic diseases;
- Showcase contemporary endodontic cases and the scientific evidence behind these techniques;
- Understand the importance of contemporary irrigation technique;
- Understand the importance of 3D Obturation Technique.

This lecture and speaker is sponsored by Eighteenth Medical

15:15 – 16:00 /

## **Edge Endo lecture**

### **Clinical management of 3D complex curvatures**

*Gianluca Gambarini*



#### **Abstract**

The lecture will focus on the need to understand root canal 3D curvatures to improve the performance and safety of NiTi rotary instrumentation. It will address the best strategies to minimize instrumentation stress in complex canals, based on clinical experimentation. It will also provide useful hints on why and how NiTi rotary instruments should be used clinically to avoid iatrogenic errors. At the end a rationale clinical protocol and novel parameters of use of NiTi instruments will be illustrated based on scientific evidence.

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This lecture and speaker is sponsored by Edge Endo

16:00 – 16:30 / **COFFEE BREAK**

/ **Session chair:** *Ivica Anic*

16:30 - 17:15 /

## **Septodont Lecture**

### **Calcium silicate-based sealer - a new “must-have” in endodontics?**

*Till Dammaschke*



#### **Abstract**

Cements based on calcium silicate such as ProRoot MTA, MTA Angelus and Biodentine, are characterized by both biocompatibility and bioactivity and have dentin-sealing properties. Therefore, these calcium silicate cements have been well established for the treatment of perforation, for retrograde root canal obturation, or for closure of other root canal defects. Therefore, recently, several dental companies have also offered root canal sealers based of calcium silicate to combine the positive properties of the calcium silicate cements and conventional sealers for root canal obturation. But what are the benefits of these sealers? Where are the advantages? What are possible disadvantages? Should one change her/his treatment concept accordingly?

#### **Aims**

This lecture aims to provide an overview of current scientific findings on calcium silicate-based root canal sealers and to highlight the chances and limitations of these new materials.

**This lecture and speaker is sponsored by Septodont**

17:15 - 18:00 /

## **Woodpecker lecture 2**

**This lecture and speaker is sponsored by Woodpecker**

18:00 / **SESSION ENDS**

## / HALL 5

09:00 - 18:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

#### **Interradicular canal frequency at the bifurcation area of first mandibular molars**

*\*Briseño Marroquín B, Wentaschek S, Tennert C, Wierichs R, Wolf TG*

09:18 – 09:36 /

#### **Saving the “Natural Implant” through Apical Surgery ... Minimal Pain, Optimal Healing and Unprecedented Patient Perception**

*\*Nguyen T*

09:36 – 09:54 /

#### **Age-related clinical algorithm**

*\*Ben-Itzhak J, Solomonov M*

09:54 – 10:12 /

#### **Withdrawn**

10:12 – 10:30 /

#### **Incidence of external apical root resorption in patients undergoing orthodontic treatment – case report**

*\*Timplalexis D, Koumpia E, Mikrogeorgis G*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

#### **Do orthodontists consider endodontic complications in their orthodontic management of teeth with a history of dental trauma?**

*\*Al Hourani A, Al Badri S, Jarad F*

11:18 – 11:36 /

#### **Evaluation of treatment planning decisions among endodontists, postgraduate students, general dental practitioners and undergraduate students for complicated endodontic cases: a survey study**

*\*Alim B, Dincer A, Yurtgezen B, Guneser B*

11:36 – 11:54 /

#### **3D reconstruction softwares in endodontics**

*\*Isufi A, Xhajanka E, Gambarini G*

11:54 – 12:12 /

#### **Diagnosis and treatment perspectives of internal root resorption**

*\*Baser Can ED*

12:12 – 12:30 /

#### **The impact of endodontic over instrumentation on the anatomy of the root canal and the apical foramen: a comparison between three different endodontic motorized systems**

*\*Shay B, Moreinos D, Udi Shmueli O, Abramovitz I*

12:30 – 13:30 / **LUNCH**



## 13:30 – 14:30 / POSTER PRESENTATIONS / TRADE EXHIBITION

14:30 – 14:48 /

**Quantitative assessment of apically extruded bacteria using different instrumentation techniques and preparation taper: an invitro study**

*\*Pandey V, Priyank H*

14:48 – 15:06 /

**Cleaning the third dimension**

*\*Gawdat S*

15:06 – 15:24 /

**Efficacy of automated Ni-Ti systems in eliminating bacteria from infected root canals**

*\*Panopoulos P*

15:24 – 15:42 /

**Micro-CT evaluation of modern rotary and reciprocating glide path and shaping systems**

*\*Tutino F, Bernardi M, Alovise M, Carpegna G, Comba A, Bobbio E, Scotti N, Pasqualini D, Berutti E*

15:42 – 16:00 /

**The influence of brushing movement on geometrical shaping outcomes: A micro-CT study**

*\*Carpegna G, Alovise M, Comba A, Pasqualini D, Scotti N, Berutti E*

## 16:00 – 16:30 / COFFEE BREAK

16:30 – 16:48 /

**Comparison of the apical transportation and canal straightening between two rotary and two reciprocating systems**

*Erdogan D, \*Akbal Dincer G, Turkyilmaz A, Erdemir A*

16:48 – 17:06 /

**Root dentinal microcracks: a post-extraction experimental phenomenon?**

*\*De-Deus G, Cavalcante D, Silva E, Belladonna F, Souza E, Versiani M, Dummer P*

17:06 – 17:24 /

**Do pre-existing microcracks play a role in the in vitro resistance to root fracture?**

*\*Cavalcante D, De Deus G, Silva E, Belladonna F, Souza E, Simões M, Zehnder M*

17:24 – 17:42 /

**Influence of nickel-titanium rotary systems with varying tapers on the biomechanical behaviour of mandibular first molars with curved and straight mesial roots: a finite element analysis study**

*Cesur Y, \*Askerbeyli Ors S, Serper A, Ocak M*

17:42 – 18:00 /

**Micro guided Endodontics: A Futuristic Concept of Biominimalization**

*\*Alkhawas M*

## 18:00 / SESSION ENDS

## / HALL 6

09:00 - 18:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

#### **Electronic working length variation during endodontic treatment: a randomized clinical trial**

*\*Mirra D, Carpegna G, Alovise M, Comba A, Pasqualini D, Scotti N, Berutti E*

09:18 – 09:36 /

#### **Management of postoperative pain: risk factors and predictability, prevalence and management**

*\*Alsofi L*

09:36 – 09:54 /

#### **Neuropathic pain, what is it and why it happens, where is the role of psychosocial issue in the diagnosis and treatment**

*\*Sadr A*

09:54 – 10:12 /

#### **Withdrawn**

10:12 – 10:30 /

#### **Effective treatment protocol in C-shaped canals**

*\*Yang SE*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

#### **Establishment of experimental intraradicular biofilm model for irrigation techniques evaluation in pigs**

*\*Yahata Y, Tanaka T, Handa K, V. Venkataiah S, Kanehira M, Hasegawa T, Noiri Y, Saito M*

11:18 – 11:36 /

#### **Effect of a novel antibiotic-steroid paste over conventional antimicrobials in regenerative endodontics**

*\*Mahima T, Sannidhi H*

11:36 – 11:54 /

#### **Withdrawn**

11:54 – 12:12 /

#### **Influence of Photon-Induced Photoacoustic Streaming (PIPS) on root canal disinfection and post-operative pain: a randomized clinical trial**

*Gianello E, Bonino F, Mandras Roana JN, Borrelli J, Pasqualini D, \*Alovise M*

12:12 – 12:30 /

#### **The Novelty of Using Remotely Induced Nanoparticles via Magnetic Field Mixing to Agitate Endodontic Irrigating Solutions**

*\*Elhakim AA*

12:30 – 13:30 / **LUNCH**

## 13:30 – 14:30 / POSTER PRESENTATIONS / TRADE EXHIBITION

14:30 – 14:48 /

**Does a clinical irrigation protocol exist? How to transfer research into the practice.**

*\*Tonini R, Boschi G, Salgarello S*

14:48 – 15:06 /

**Ultimate laser techniques for irrigant activation (PIPS and SWEEPS) compared to PUI (EndoUltra) and Sonics (EndoActivator). An Ex Vivo Study: FESEM evaluation of smear layer removal**

*Mancini M, Cerroni L, \*Palopoli P, Buoni C, Olivi G, Olivi M, Cianconi L*

15:06 – 15:24 /

**The evolution of the bubble: does it matter?**

*\*De Moor RJG, Swimberghe R, Lietaer D, Ligthart S, Declercq A, De Bruyne M, Meire, MA*

15:24 – 15:42 /

**Efficacy of XP-endo finisher and Er:Yag Laser on the removal of calcium hydroxide paste from an artificial standardized apical groove**

*\*Hancerliogullari D, Durna Yurtseven F, Erdemir A*

15:42 – 16:00 /

**A novel HEDP-based irrigant and its effect on the cleanliness of root canal walls**

*\*Kfir A*

## 16:00 – 16:30 / COFFEE BREAK

16:30 – 16:48 /

**Irrigation of the pulp space in the 21st Century - Where are we now?**

*\*Farmakis ETR*

16:48 – 17:06 /

**Do we really need to activate our irrigant?**

*\*Elkholy MMA*

17:06 – 17:24 /

**Effect of different final irrigation protocols on fracture resistance of endodontically treated teeth**

*Doganay Yildiz E, \*Fidan ME*

17:24 – 17:42 /

**Effect of Different Laser-Assisted Irrigation Activation Techniques on Apical Debris Extrusion**

*Doganay Yildiz E, \*Dincer B*

17:42 – 18:00 /

**Root fracture resistance of human teeth after exposure to calcium hydroxide**

*\*Al-Hiyasat AS, Elfarraj HS*

## 18:00 / SESSION ENDS

## / HALL 7

09:00 - 18:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

**Etiological factors influencing the outcomes of regenerative endodontic procedures**

*\*Nagy M*

09:18 – 09:36 /

**The potentials of regenerative endodontics and their Uses in mature necrotic teeth**

*\*Shibani M, Gambarini G*

09:36 – 09:54 /

**Cell-based dentin-pulp regeneration: Towards a biomimetic translation of the native stem cell niche control**

*\*Fahmy SH*

09:54 – 10:12 /

**Biomechanical performance of teeth treated with revitalization during biting, traumatism and orthodontic movement. A finite element analysis**

*\*Bucchi C, Marcé-Nogué J, Galler K, Widbiller M*

10:12 – 10:30 /

**Withdrawn**

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

**Dental pulp stem cells: Isolation, culture methods and effects of surfactant addition to EDTA**

*\*Kucukkaya Eren S, Bahador Zırh E, Zeybek ND, Askerbeyli Örs S, Aksel H, Parashos P*

11:18 – 11:36 /

**It's alive, will tissue regeneration in mature teeth become a future reality?**

*\*Hassan R*

11:36 – 11:54 /

**Evaluation of case-reports/clinical studies considering regenerative approaches in three indexed endodontic journals between 2009-2018**

*\*Turer SH, Uzunoglu Ozyurek E, Altundasar E*

11:54 – 12:12 /

**Stem cells from apical papilla and their role in endodontic regenerative techniques. Review and future perspectives**

*\*Sarris K, Sakka D, Timplalexis D, Digka A, Lyroutdia K*

12:12 – 12:30 /

**Dental pulp regeneration innovative protocol: a report of clinical cases**

*\*Domini MC, Alovizi M, Comba A, Carpegna G, Pasqualini D, Berutti E*

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 14:48 /

**The Potential Application of Berberine in Endodontics**

*\*Sun J, Cui Y, Xie J, Zheng L, Huang D, Ye L, Zhou X*

14:48 – 15:06 /

**Withdrawn**

15:06 – 15:24 /

**Fracture incidence of Revo-S and Protaper-Next instrument files by endodontic students or endodontic specialists: a cross-sectional retrospective study**

*\*Bozkurt DA, Terlemez A*

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15:24 – 15:42 /

**The role of systemic medications in the pathogenesis or healing of apical periodontitis**

*\*Fouad A*

15:42 – 16:00 /

**Separated instruments - Algorithm of clinical decision making**

*\*Solomonov M*

16:00 – 16:30 / **COFFEE BREAK**

16:30 – 16:48 /

**Arguments, steps and tools of minimally invasive endodontics**

*\*Kececi AD*

16:48 – 17:06 /

**Micro-CT study on cadaver of micro-cracks formation after rotary and reciprocating instrumentation**

*\*Giuliano C, Tassone R, Carpegna G, Pasqualini D, Alovisei M, Scotti N, Berutti E*

17:06 – 17:24 /

**Post-operative quality of life following single-visit root canal treatment performed with WaveOne Gold technique: an observational study.**

*\*Multari S, Carpegna G, Migliaretti G, Comba A, Scotti N, Berutti E, Pasqualini D*

17:24 – 17:42 /

**The Use of Hypnosis in Endodontics**

*\*Iriboz E*

17:42 – 18:00 /

**Effect of different intracoronary bleaching agents and their interaction with the final irrigation regimen on microhardness, tubule radius and mineral content of coronal dentine**

*\*Karaaslan H, Altundasar E, Özçelik B*

18.00 / **SESSION ENDS**



## PROGRAMME

### / HALL 1

/ **Session chair:** *Lora Mishra*

09:00 – 09:45 /

#### **The future - endodontic surgery**

*Silvio Taschieri*



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09:45 – 10:30 /

#### **The future - the survival of endodontically treated teeth**

*Helena Fransson*



##### **Abstract**

It is commonly acknowledged that oral health is essential for general health and well-being. Tooth retention is often used as an indicator of oral health, and retention of the natural teeth may determine people's perceptions of good oral health. In order to avoid extractions and maintain the dentition, endodontic treatment aims to eliminate or prevent an infection within the root canal system. However, endodontic treatment are not always successful in eliminating the infection. We do know that extraction of root-filled teeth is more common than extractions of non root-filledteeth, hence survival of endodontically treated teeth may be of interest to us dentists, our patients and different stakeholders in the society. We are used to discussing factors related to the more familiar outcome of 'healthy periapical tissues', but how about factors related to 'tooth survival'? Tooth survival may be the most relevant outcome measure for the patient, but will it potentially lead to acceptance of poorer endodontic treatments and persistent apical periodontitis?

##### **Aims**

The aim of the lecture is to present the current knowledge on survival of endodontically treated teeth and to consider opportunities and obstacles in using the outcome measure tooth survival.

##### **Objectives**

At the end of this presentation, the attendee should be familiar with factors related to tooth survival of endodontically treated teeth and appraise the prospects and obstacles in using the outcome measure tooth survival.

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10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair:** *Matthias Holly*

11:00 – 11:45 /

## **The future - removing and bypassing fractured instruments tips and tricks to solve the problem**

*Augusto Malentacca*



### **Abstract**

In the past, the fracture of an instrument during a root canal treatment was a fairly rare event but today, with the extensive use of rotary instruments, the incidence of breakage is increasingly common. The majority of breakages occur when using rotary Ni Ti instruments: only 15.9 % of separated instruments are manual steel files, versus 78.1 % of separated Ni Ti rotary files.

The great improvements that have been achieved over the last years in the removal of separated instruments within canals are essentially due to the use of microscopes and ultrasonic devices.

The operating microscope provides us with an increased vision that is not comparable to any other form of magnifier mounted on glasses or head wear; the true advantage of the microscope lies in the illumination, that is coaxial with the field of vision. This allows us to see perfectly even within a tiny, long and narrow tube such as the root canal. Ultrasonic devices for their part, with the utilization of very tiny tips, allow us to work in clear view of the object without any visual obstruction from other mechanical sections of the instrumentation, like the head of the handpieces.

### **Aims**

The purpose of my presentation will be to show the various situations in which an accident may occur, and to illustrate all the tips and tricks necessary to solve the problem. We will also evaluate whether the technological innovations can be useful in this field.

### **Objectives**

In this lecture I will be dealing especially with the clinical and operative aspects of this difficult chapter in endodontic treatment. We will also face the problems related to the treatment plan and the importance of removing a separated instrument from the canal, reducing the risks of weakening the tooth.

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11:45 – 12:30 /

## **The future - treating the calcified pulp chamber and canal**

*Helmut Walsch*



### **Abstract**

Everyone taking the challenge of root canal treatment is aware that the difficulty of treating a tooth with pulp space calcifications increases with the degree of calcification. In most cases, the calcification process progresses from coronal to apical. Even if the coronal aspect is completely occluded, a difficult to find patent remainder of the root canal is often expected further apical. One good example is the 'mb2' canal. In addition, calcific dentin is laid down on the entire root canal wall surface to different extents. The resulting reduced canal diameter and various other complications make negotiation and instrumentation challenging and time consuming. Many photographically and radiographically documented clinical cases together with the respective scientific

evidence will demonstrate effective strategies for the successful management of all difficulties involved in the management of calcified root canals. Future concepts, some of which are already in development, as well as new ideas will be discussed.

### Aims

Enable the practitioner to implement immediately the correct strategies successfully into clinical practice and sharpen her/his view on new ideas.

### Objectives

- Determine the specific challenges of individual calcified cases and estimate their expected extent;
- Demonstrate and evaluate various strategies and describe when and how to apply them;
- Contemplate on future ideas of calcification management.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

/ **Session chair:** *Johannes Reichsthaler*

14:30 – 15.15 /

### **The future - early clinical diagnosis and biomechanics of vertical root fractures**

*Zvi Metzger*



### **Abstract**

Vertical root fractures (VRFs) are often undiagnosed or misdiagnosed for a rather long time, thus frustrating both the patient and his dentist. At early stage VRFs cannot be detected with periapical radiographs. The "typical radiographic appearance of VRF", which is commonly mentioned in papers and quoted in textbooks, often represents unjustified failure to diagnose the VRF in time, before a major damage to the surrounding bone has occurred. The most pathognomonic early sign of VRF is a unique type of periodontal pocket, which is very narrow and deep, which may appear with or without a sinus tract that is located more coronally than expected from a sinus tract emerging from a periapical lesion, even at the attached gingiva. CBCT cannot usually demonstrate the early VRF itself, however it may be very useful to identify the pattern of bone destruction that occurs along the VRF. The aim of this presentation will be to make each of the audience an expert in early diagnosis of VRFs. To minimize the risk of VRFs it is essential to understand the biomechanics of VRFs and the predisposing factors that may lead to such fractures. Some of these are naturally occurring factors, such as the shape of the root and pre-existing naturally occurring micro-cracks. Nevertheless, other predisposing factors are iatrogenic in nature and thus depend on the endodontic procedure that was carried out on this tooth. These include excessive instrumentation of the canal, instrumentation that results in uneven thickness

of the canal walls, type of spreader used for lateral compaction and above all the creation of iatrogenic micro-cracks by using large taper rotary and reciprocating files. The predisposing factors will be reviewed in details, including suggesting ways how to minimize or avoid the iatrogenic contribution to the creation of VRFs.

## Aims

The aim of the presentation is to emphasize the importance of early diagnosis of vertical root fractures as opposed to diagnosis by “typical radiolucency” which represents a very late detection of VRF.

## Objectives

- To clarify the difference between early and late diagnosis of vertical root fracture;
- To provide effective tools for making an early diagnosis of vertical root fracture, thus avoiding the damage that may be caused by delayed diagnosis;
- To clarify that diagnosis of vertical root fracture by “typical radiolucency” alone, represents a neglected case, which already allowed for irreversible damage to the bone to occur;
- To clarify the natural vs. iatrogenic predisposing factors that may lead to development of vertical root fractures;
- To encourage the development and use of less aggressive root canal preparations and less aggressive endodontic instruments, in order to reduce the potential iatrogenic contribution to development of vertical root fractures.

I declare I have a past or present financial interest/arrangement, consulting position, or affiliation with the corporate organization(s) whose product(s) I will discuss in my presentation - previously Scientific Advisor to ReDent-Nova, manufacturer of the Self-adjusting File

15:15 – 16:00 /

## The future - quality of life and Endodontics

*Prasanna Neelakantan*



## Abstract

Pain and discomfort arising from endodontic diseases have long been considered in diagnosis and treatment planning. However, arguably, it is the impact and consequence of these symptoms on the quality of life (QoL) or daily living that is important in providing understanding of the burden of the diseases and ultimately in determining the benefit of care to the lives of patients. To this end there has been a growing interest into assessing the impact of endodontic disease on health- and oral health-related quality of life (OHRQoL) and on studies to identify key factors associated with its impact. Systematic reviews have addressed this important topic in complete maxillary dentures treatments, implant supported mandibular overdentures, and dental implant rehabilitation. This lecture will review the literature on the impact of Endodontics treatment on quality of life, systematically dissect the methods used and offer suggestions on methodological issues in performing studies on QoL outcome measures.

## Aims

To review the literature to address the important question: Does endodontic treatment improve oral health-related quality of life.

**Objectives**

This lecture will first provide an overview of QoL. This will be followed by a systematic review of the literature that has evaluated QoL after non-surgical and surgical endodontic treatment, including retreatment. The lecture will conclude with the potential problems in current literature and open up some blue-sky thinking on how future studies can be performed to ascertain the impact of endodontic therapies on quality of life.

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16:00 / CONGRESS ENDS



Booth No.:2S

## / HALL 2

/ **Session chair:** *Tom Schloss*

09:00 – 09:45 /

### **Management of iatrogenic errors by non-surgical and surgical retreatment**

*Frank Setzer*



#### **Abstract**

This presentation will systematically discuss treatment of iatrogenic perforations, removal of instrument fragments and other foreign objects from the root canal system. It will review both non-surgical as well as surgical treatment option using an evidence-based approach for decision-making in regard to materials and outcomes. In addition, it will be discussed how to successfully prevent instrument separations, or other iatrogenic errors that may occur throughout the instrumentation of complex root canal systems.

#### **Aims**

This lecture will provide the participant with key information to treatment plan and manage the most common iatrogenic errors.

#### **Objectives**

- Discuss current materials and techniques for perforation repair;
- Review reasons for instrument separation, prevention and removal techniques;
- Evaluate differences in outcome and management strategies for non-surgical versus surgical retreatment.

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09:45 – 10:30 /

### **Non-surgical retreatment of teeth with persisting apical periodontitis following apicoectomy**

*Michael Hülsmann*



#### **Abstract**

Root resection frequently is performed in cases of failed non-surgical endodontic therapy. The mean success rates from published studies for endodontic surgery are as high as 58.9% without and 79.6% with pre-surgical retreatment of the root canal filling. Systematic reviews reported a success rate for apical surgery of 77.8% 2-4 years postoperatively and of 71.8% after 4-6 years. Using microsurgical techniques even up to 94% have been reported. These data indicates that in a number of cases of failure of apical surgery further treatment is necessary. The problems encountered with non-surgical retreatment include proper analysis of the reason for the persistence of the apical pathology, case selection, determination and measurement of endodontic working length, removal of retrograde fillings, disinfection and re-obturation. Few clinical studies and a limited number of published case reports indicate that the success rate of non-surgical orthograde retreatment of previously apicected teeth with persisting apical periodontitis will be between 60 and 70%, making this type of treatment a treatment option in selected cases.



## Aims

Based on the current literature and on clinical cases non-surgical orthograde retreatment will be presented as a possible treatment option with limited success rates.

## Objectives

- To describe a strategy for non-surgical orthograde retreatment of previously apicected teeth with persisting apical periodontitis;
- To review the literature concerning case selection, techniques, problems and prognosis associated with such cases;
- To present different clinical cases.

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10:30 – 11:00 / **COFFEE BREAK**

/ **Session chair:** *Mario Castro*

11:00 – 11:45 /

## Retrograde root canal treatment

*Peter Jonasson*



## Abstract

Orthograde endodontic treatment of necrotic teeth with apical periodontitis may be complicated by limited access to the root canals due to restorations and root canal calcifications. To achieve entrance for root canal treatment in such cases the access preparation may jeopardize retention of the crown and cause prosthodontic failure. Leaving the crown intact and perform retrograde root canal treatment might be an alternative approach. The potential to promote healing with retrograde endodontic treatment and the technical feasibility to clean, shape and fill the canal has been evaluated in a prospective study. Within the limitations of this study, retrograde root canal treatment is a reliable alternative to treat necrotic teeth with apical periodontitis on single- and two-rooted teeth with limited access to the root canals in the upper jaw.

## Aims

To present results from a prospective study evaluating retrograde root canal treatment as an alternative approach to orthograde root canal treatment in teeth with necrotic pulps and apical periodontitis.

## Objectives

To share experiences from performing retrograde root canal treatment by a surgical procedure as a primary endodontic treatment.

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11:45 – 12:30 /

## How to restore broken down root filled teeth

Simone Grandini



### Abstract

Endodontic therapy is not complete until a final coronal restoration has been performed. A number of research papers have demonstrated that success rates fall dramatically the longer the delay between the completion of the obturation and the final rebuilding of the crown. Research also tells us that endodontic success is contingent with the quality of the coronal restoration. Many changes take place after root canal treatment, and it is sometimes hard for the clinician to deal with heavily compromised teeth. The ultimate restoration has to return the tooth to function, protect the underlying tooth structure and have proper aesthetics. The lecture will focus on the diagnosis and decision making in the restoration of endodontically treated teeth, it will offer an overview on the different available solutions for the restoration, and it will discuss a workflow both for direct and indirect restorative procedures.

### Aims

Present the guidelines for the restoration of severely damaged teeth.

### Objectives

The lecture will provide the audience with an overview of the limits and possibilities when restoring a severely damaged tooth.

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12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 15:15 /

## Endodontic disinfection in a world of surrogates

Erick Souza



### Abstract

Endodontic disinfection is certainly the crucial phase of the treatment and besides its fate and role in the outcome it is the single technical step that lacks a clear and meaningful measurement tool. Because of this limitation, endodontic disinfection is solely estimated by various technical landmarks - such as working length, quality and size of preparation, radiographic quality of obturation, quality of irrigation, chemical solution used etc... Although related, none of these technical parameters provide a direct measure of disinfection level, and therefore could be regarded as disinfection surrogates. Unfortunately, root canal disinfection is nearly 100% estimated on the basis of surrogates. Moreover, several of those surrogates are constantly not proven to be directly correlated to apical healing. Since almost all technological advancements in the field are tested against common clinical and laboratorial surrogates, this may lead the profession towards technological investments that do not result in useful advancements for the outcome of the treatment. In this lecture, we explore this topic using a very though-provoking approach, addressing the current most important surrogates of Endodontic disinfection.

## Aims

To uncover Endodontic disinfection under the perspective of surrogates.

## Objectives

- To reveal the main technical limitation of Endodontic disinfection;
- To provide a meaningful understanding of the role of surrogates in Endodontics;
- To underscore the main surrogates of Endodontic disinfection;
- To discuss alternatives to overcome this limitation - a call for action.

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15:15 – 16:00 /

## Caries or pre-eruptive resorption? - a challenging differential diagnosis with clinical consequences

Beat Suter



## Abstract

Pre-eruptive resorption is a rare clinical finding in erupting teeth of young individuals that maybe misinterpreted as a carious lesion. This may lead to unnecessary endodontic treatment. Pre-eruptive resorption develops in teeth before they break through the gingival tissue or replace their corresponding deciduous tooth. The pre-eruptive resorption tissue then becomes necrotic from loss of blood supply when the tooth erupts.

The differential diagnosis of pre-eruptive resorption is complex. To help this process, different clinical cases of pre-eruptive resorption, other external resorptions and deep carious lesions, will be reported together with their corresponding histological images. In addition reference will be made to invasive cervical resorptions in humans and external resorptions in the cat model. The emphasis is to explain the specific appearance of each different disease state with the clinical outcomes of their treatment, their prognosis and the possible alternative therapies.

## Aims

To describe the clinical and histological appearances of pre-eruptive resorption and to differentiate them from other types of resorption (e.g. external) and from carious lesions.

## Objectives

By presenting detailed clinical cases of firstly, different stages of pre-eruptive resorption, secondly, external resorption and thirdly, carious lesions with their respective matched histological images their particular characteristics will be compared and contrasted.

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16:00 / CONGRESS ENDS

## / HALL 3

09:00 - 12:30 /

### **Symposium: Endodontics and systemic health**

*Led by Thomas Kvist and Luc van der Sluis*

09:00 – 09:15 /

### **Introduction: Endodontics and systemic health**

*Luc van der Sluis*



#### **Abstract**

In 2014, the ESE organized a Research Meeting on “The relationship between endodontic infections and their treatment with systemic diseases”. A report from the meeting was published in the International Endodontic Journal (IEJ 2015;48,913-5). An overall outcome from the meeting was that the evidence of a relation between endodontic infection and systemic disease was low. The report included some suggestions for further action. Finally, the report (ESE-statement from 2015) should be revised, if necessary, in the light of possible any relevant new evidence on these topics.

#### **Objectives**

The presentations and discussions of this symposium are focusing on the following issues:

- Has evidence on these topics evolved since 2014?
- To what extent the suggestions for further actions have been implemented?
- How is the progression of two ESE funded projects on these topics?
- Is there a need for new initiatives or networks?

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09:15 – 10:00 /

### **The oral – general health connection. Association or causation?**

### **Scientific and ethical challenges.**

*Bjørn Hofmann*



#### **Abstract**

There is an oral exceptionalism in medicine: the mouth is singled out as being different. The mouth is treated in special places and needs attention by a particular profession. In most other fields you have specialists for specific organs or body parts, but for the mouth, you have a separate profession. There may be historical and practical reasons for this. However, it poses some challenges in viewing the human being as a unified organism and a whole person. How does the mouth connect to the rest of the body? This is the key question of this presentation. The presentation will draw on conceptual analysis with basis in standard approaches in philosophy of science and ethics. In particular, it will refer to theories of causality and uncertainty.

#### **Aims**

The aim of the presentation is to highlight and discuss some scientific and ethical challenges with reconnecting the mouth to the rest of the human body.

## Objectives

The aim will be achieved by addressing three specific questions: 1. Are there causal connections between oral health and other health problems? 2. How should we handle the uncertainty with respect to such connections? 3. What are the ethical challenges with handling such connections?

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10:00 – 10:15 /

## **Do root fillings and apical periodontitis increase the risk of a first myocardial infarction?**

*Thomas Kvist*



## Abstract

The evidence of a possible association between cardiovascular disease and inflammatory processes of endodontic origin is poor and only a few scientific studies of good quality are available. The association between marginal periodontitis and cardiovascular disease rests on a more solid scientific basis. For example, a recent Swedish case-control study (Parokrank) of 805 patients diagnosed with their first myocardial infarction found an increased risk (OR 1.28) for a first myocardial infarction in individuals with marginal periodontitis.

## Objectives

Using the available panoramic radiographs from (Parokrank), the following variables of primary interest were recorded for each of the 805 myocardial infarct patients and their age, gender and geographical area matched controls.

- The number of remaining teeth;
- The number of root filled teeth;
- The number of teeth with periapical bone destruction.

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10:15 – 10:30 /

## **Endodontic infections, inflammation, and coronary artery disease.**

*Pirkko Pussinen*



## Abstract

Coronary artery disease is mainly caused by atherosclerosis, which is a slowly progressive, multifactorial disease described as a disorder of lipid metabolism and a chronic inflammatory disease. Endodontic lesions are among the dysbiosis-driven infections putatively contributing to systemic inflammatory burden and atherogenesis. One of the most studied virulence factor of gram-negative bacteria, which potentially originates from the oral microbiota, is lipopolysaccharide. It is a potent activator of both innate and adaptive immunity and considered as a proatherogenic molecule. The hypothesis is that endodontic infections give rise to proinflammatory mediators, bacteremia/endotoxemia, and proatherogenic immune responses.

The aim is to investigate, i) how endodontic infections associate with the local and systemic biomarkers of inflammation, tissue destruction, and immune response, ii) whether endodontic infections associate with cardiovascular outcomes including death.

Considering the high prevalence of endodontic lesions and the putative proatherogenic inflammatory burden that they cause, the relevance of dental care to public health is extensive. Investigating the role of endodontic infections in coronary artery disease is important both for mapping the individual cardiovascular risk factors and in planning of the treatments. The results may lead to improvements in the treatment modalities of endodontic infections in the aging population.

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10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:20 /

## **The influence of apical periodontitis on the concentration of inflammatory mediators in peripheral blood plasma**

*Suzette van der Waal*



### **Abstract**

In dentistry, we wish to know more about the impact of apical periodontitis on general health. This talk will start with results from a recent systematic review of the literature. Then, a current ongoing clinical study that follows patients with apical periodontitis before and until three months after treatment will be discussed. In this study it was chosen to investigate the impact of apical periodontitis on health rather than medical conditions such as cardiovascular disease, renal disease, diabetes etc. But how can general health be defined? Background information about low-grade inflammation is given and why we must know about low-grade inflammation in endodontology.

### **Aims**

To give an overview of recent literature about apical periodontitis and inflammatory mediators in peripheral blood. To propose new study designs to investigate relationships between apical periodontitis and health.

### **Objectives**

By explaining the design and choices that were made for a current clinical study about the relationship between apical periodontitis and general health. Also, suggestions are given on how to perform such a study plus on how to present data in a more uniform way so that data of smaller-scale studies can be used for meta-analyses.

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11:20 – 11:45 /

## How healing of Apical Periodontitis is influenced by the health of the patients and their genetic background

*Elisabetta Cotti*



### Abstract

It is widely-known that a correct endodontic treatment should take care of endodontic infection and promote healing of apical periodontitis (AP). The general health of the patient, the medications taken, and host predisposing factors, like genetics, have been seldom considered when discussing the treatment and prognosis of AP, and they have proved to be almost as important as the quality of root canal treatment. The population of patients requiring endodontic treatment is changing: patients often suffer from a variety of pathologies and/or are under new categories of medications (like immune- modulators). All these conditions influence both the clinical manifestations and the response to treatment of AP, and it is important that are brought to the attention of the clinician to enable him/her to alter the treatment and evaluate its expectations accordingly. Furthermore, the new studies available provide information on the interaction of the status of the patient and the outcome of endodontic treatment, and this newly investigated field brings an opening to a future pharmacologic approach to persistent AP.

### Aims

The aim of this lecture is to discuss the impact of factors from the host and of biologic modifiers on the progression and response to treatment of apical periodontitis (AP), exploring how persistent AP may be influenced positively or negatively by the use of medications.

### Objectives

In the light of the classic and latest literature available and based on recent research, the following items will be addressed:

- Which is the impact of the status of the immune system of the patient on progression, healing and timing of healing of AP;
- Which are the interferences of immune-modulatory drugs and of drugs acting on bone metabolism on the development and treatment of AP;
- Which are the dedicated protocols for the management of AP in medically compromised patients;
- Which could be a future opening to a pharmacological aid for the treatment of persistent AP.

11:45 – 12:00 /

## Apical periodontitis and diabetes – an update Association does not always imply causation

*Juan José Segura-Egea*



### Abstract

Apical periodontitis (AP) and root canal treatment (RCT), the elective treatment for teeth with AP that must be preserved, are both very prevalent. The possible connection between AP and RCT and systemic health is an exciting aspect faced nowadays by the scientific community. In the last years, endodontic medicine has developed and numerous epidemiological studies have analysed the relationship between AP and RCT and some prevalent systemic status such as diabetes mellitus, smoking habits and cardiovascular disease. The results of these studies suggest the association between endodontic variables, i.e. AP and RCT, and diabetes. Furthermore, several data suggest a relationship between diabetes and RCT outcome. This lecture reviews the scientific evidence regarding the connection between periapical and endodontic states and diabetes analyzing the systematic reviews and meta-analyses carried out on this topic. Two meta-analyses concluded that the outcome of RCT is significantly worse in diabetic patients compared to healthy control

subjects. Root-filled teeth (RFT) of diabetic patients showed radiolucent periapical lesions more frequently and were also extracted more frequently than RFT of healthy controls. Difference between causation and association is highlighted.

## Aims

To analyze the scientific evidence regarding the connection between endodontic variables and diabetes, differentiating between association and causation.

## Objectives

To analyze the published systematic reviews and meta-analysis carried out on the association between endodontics and diabetes, and to assess the fulfilment of the causation criteria of Bradford Hill.

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12:00 – 12:30 /

**Discussion**

12:30 – 13:30 / **LUNCH**



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13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 - 16:00 /

## **Symposium: Digital endodontics**

*Led by Gianluca Gambarini*

14:30 – 14:50 /

### **3D models for teaching and research in Endodontics**

*Lucila Piasecki*



#### **Abstract**

The highly variable and complex internal anatomy of the human teeth poses a challenge regarding the standardization of levels of difficulty for teaching, as well for sample selection for research. Currently, digital technologies can be used for the virtual rendering and rapid prototyping of three-dimensional dental models, as well as virtual and augmented realities can be applied to the learning environment and development of competencies. These resources have the potential to improve many aspects of teaching and research in our field.

#### **Aims**

The aim of this presentation will be to discuss how digital technologies could be used to improve teaching or research in Endodontics.

#### **Objectives**

Present some of the different virtual models, 3D printed models, digital applications and medias that potentially can be applied for teaching or research in Endodontics.

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14:50 – 15 10 /

### **Endodontic Guides and 3D Printing**

*P. Sebastian Ortolani Seltenerich*



#### **Abstract**

Accessing the root canal system in some cases can be very difficult and time consuming. The use of CBCT is very useful for the treatment planning and for evaluation of the complexity of the dental anatomy. The use of virtual models and 3D guides allows a new approach minimizing the risk of procedural errors. 3D printed guides are used to locate the canal in a safe and easy way.

#### **Aims**

The aim of this presentation will be to review how new technology can reduce common iatrogenic problems during the cavity access in the treatment of complex endodontic cases.

## Objectives

- Discuss the future application of a combination of CbCt and a 3D printer in the treatment of calcified canal systems;
- Utilize the new technology available (3D imaging, dental operating microscope, ultrasonics) to improve on the diagnosis and prognosis of cases with calcified canal systems;
- Describe the steps required to produce a 3-D printed guide for targeted endodontic treatment.

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15:10 – 15:30 /

## 3D assessment of canal complexities with new endodontic software

### 3D case assessment

*Gianluca Gambarini*



## Abstract

The lecture will address the impact of digital technologies, including low-dose CBCTs, softwares, 3d rendering and connected devices in the endodontic clinical practice. Understanding anatomy in 3d dimensions (3d case assessment) to improve procedures and minimize risks is a great improvement for the quality and simplicity of treatments. The lecture will describe the advantages of using CBCT softwares in diagnosis, treatment plan, and followups both for treatment and retreatment cases, also showing the possible advantages of new 3d guided devices in performing the above-mentioned endodontic procedures.

## Aims

To describe how endodontic instrumentation can benefit from CBCT and related new technologies and software.

## Objectives

- Point out the advantages of understanding anatomy in 3d dimensions to improve shaping and access cavity design;
- Describe the advantages of 3D rendering also in diagnosis, treatment plan and follow-ups;
- Show the possible advantages of new technologies in the endodontic procedures.

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15:30 – 15:50 /

## Digital solutions for post-endodontic restorations

### How CAD/CAM techniques will change your endodontic life

*Massimo Gagliani*



## Abstract

The importance of the coronal seal have been already demonstrated by several studies and it should be considered a fundamental phase of the endodontic treatment itself. The reconstruction of endodontically

treated teeth should be routinely accomplished by adhesive procedures, both in direct and in indirect ways; these procedures represent a challenge for the clinician. In these cases, most of the time, the residual tooth structure is very limited and a careful attention should be paid to the type of hard tissue available and to all the surrounding periodontal tissues. Many studies advocated a superior performance of complete vs. partial restorations, but many of these reports should be reviewed and no conclusive data are yet available. Inlay, onlay or overlays are the most recognized type of indirect partial reconstructions; they are made by different materials. Composite, glass and feldspathic ceramics are now available for modern CAD/CAM chairside devices and all of them are suitable to make indirect restoration; longitudinal studies report excellent outcome results and, the improvement of these techniques might encourage further types of reconstruction, particularly those named "endocrowns". A comprehensive and fully documented overview on indirect partial extensive adhesive restorations, with or without intracanal adhesive endo-posts, will be illustrated and proposed as a reliable alternative to complete prosthetic crowns in all posterior teeth, to induce the clinicians to preserve sound tooth structure and to supply a better interface with all the periodontal tissues.

### **Aims**

To emphasize the importance of the post-endodontic reconstruction To present a brief overview of the current status in CAD/CAM devices and technological support available for single tooth post-endodontic reconstruction To evaluate the materials available for these type of procedures To expose the integration between the digital workflow and endodontic treatment

### **Objectives**

A short literature review will be accomplished to demonstrate the importance of the post endodontic reconstruction, some of the well known CAD/CAM devices and technologies available for single tooth post endodontic reconstruction will be illustrated, as well as a rapid evaluation of the materials available for indirect restorations will be presented. Case series and data from several different clinical trials will be presented to explain the integration between the digital workflow and the endodontic treatment and to illustrate the great clinical efficacy of these post-endodontic reconstructions

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15:50 – 16:00 /

**Discussion**

16:00 / **CONGRESS ENDS**

## / HALL 4

09:00 - 16:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

#### **The influence of Type 2 Diabetes on clinically normal dental pulp tissues**

*\*AlSamahi S, Milne TJ, Rich AM, Hussaini HM, Friedlander LT*

09:18 – 09:36 /

#### **Injectable functionalised phosphopullulan-based biomaterial for pulp-tissue engineering. An ex-vivo and in-vivo study.**

*\*Pedano MS, Li X, Camargo B, Yoshihara K, Yoshida Y, Van Landuyt KL, Van Meerbeek B*

09:36 – 09:54 /

#### **Global gene expression analysis of immunological responses during the development of apical periodontitis model in mice.**

*\*Hasegawa T, Handa K, Yahata Y, Tanaka T, V.Venkataiah S, Njuguna M, Noiri Y, Saito M*

09:54 – 10:12 /

#### **Variation of early endothelial dysfunction markers in patients with apical periodontitis after root canal therapy: A clinical and biomolecular study**

*\*Giuggia B, Bergandi L, Comba A, Alovizi M, Carpegna G, Scotti N, Pasqualini D, Berutti E*

10:12 – 10:30 /

#### **The shortcomings of current clinical endodontic diagnostics and possible role of biomarkers**

*\*Erdogan O, Gibbs JL*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

#### **Macrophages hyperactivation in sustained exposure to *Enterococcus faecalis***

*\*Yaya A, Polak D, Ginsburg I, Abramovitz I*

11:18 – 11:36 /

#### **Post-Treatment Symptomatic Apical Periodontitis and Neuropeptide Release in the Periodontal Ligament After Root Canal Preparation with Different Single-File Techniques**

*\*Caviedes-Bucheli J, Munoz HR*

11:36 – 11:54 /

#### **Biological Implications of Occlusal Trauma and Orthodontic Forces in human dental pulp and its relationship with angiogenic mechanisms**

*\*Munoz HR, Caviedes-Bucheli J*



11:54 – 12:12 /

**The local and systemic consequences of apical periodontitis on oxidative stress**

*\*Georgiou AC, Cornejo Ulloa P, Crielaard W, van der Waal SV*

12:12 - 12:30 /

**Aesthetic restorations of anterior teeth following endodontic treatment**

*\*Koç P*

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 14:48 /

**Rehabilitation of endodontic treated teeth with extensive loss of coronal structure –  
Where do we come from, where do go?**

*\*Fernandes V, Ferreira S, Miller P, Ferraz A, Souza J*

14:48 – 15:06 /

**Restoration of Endodontically Treated Teeth: Chasing Longevity**

*\*Metwally AT*

15:06 – 15:24 /

**A Systematic review and Meta-Analysis of survival of ceramic onlays on root canal treated teeth**

*\*Rahim N, Austin R, Foschi F, Mannocci F*

15:24 – 15:42 /

**Restoration of the endodontically treated tooth**

*\*Karunanayake GA*

15:42 – 16:00 /

**Relationship between post and the survival of endodontically treated teeth:  
a retrospective cohort study**

*\*Çelik G, Eroglu E, Üreyen KB, Yaylali I*

16.00 / **CONGRESS ENDS**

## / HALL 5

09:00 - 16:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

#### **An international survey on the use of hydraulic calcium silicate-based sealers in non surgical endodontic treatment**

*\*Guivarc'h M, Jeanneau C, Giraud T, Pommel L, About I, Azim AA, Bukiet F*

09:18 – 09:36 /

#### **Thermal obturation of root canals under standardized conditions: an in vitro study**

*\*Wolf TG, Tennert C, Willems L, Briseño Marroquín B*

09:36 – 09:54 /

#### **Influence of Diode and Er,Cr: YSGG Laser use on the push-out bond strength of a bioceramic-based root canal filling**

*\*Çiftçioğlu E, Barut G, Işık V, Arıcan Öztürk B, Karagöz-Küçükay I*

09:54 – 10:12 /

#### **Endodontic filling technique: comparative study of manual vs mechanical lateral condensation**

*Diemer F, Tchorowski-Pellizzari Y, Baldé I, Peli JF, \*Hamdan R, Georgelin-Gurgel M*

10:12 – 10:30 /

#### **Do heated pluggers show the exact temperature?**

*\*Bakırcı T, Yaltırık H, Baştürk FB, Günday M*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

#### **Evaluation of the root canal tridimensional filling with warm vertical condensation, carrier-based technique and single cone with bioceramic sealer: a micro-CT study**

*\*Moccia E, Dell'Acqua A, Alovise M, Carpegna G, Comba A, Pasqualini D, Berutti E*

11:18 – 11:36 /

#### **Interaction of MTA-based cements and tissues**

*\*Marciano MA, Pelepenko LE, Gomes BPFA, Soares AJ, Almeida JFA, Ferraz CR, Zaia AA*

11:36 – 11:54 /

#### **Dentinal tubule penetration of AH Plus, BC Sealer and a novel tricalcium silicate sealer: a confocal laser scanning microscopy study**

*\*El Hachem R*

11:54 – 12:12 /

#### **Single cone obturation in Endodontics: What is new and what is true?**

*\*Shehabeldin I*

12:12 – 12:30

**Dislocation resistance of three different tricalcium silicate cements**

*\*Ruiz Durán C, González Losada C, González V*

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 14:48 /

**Biocompatibility and Osteogenic Potential of different bioceramic materials in endodontics: a comparative study**

*\*Mola V, Annaratone L, Carpegna G, Comba A, Berutti E, Pasqualini D*

14:48 – 15:06 /

**Micro-CT analysis of the marginal adaptation and porosity associated with ultrasonic activation of Biodentine, NeoMTA Plus and ProRoot MTA**

*\*Dincer AN, Guneser MB, Sisli SN*

15:06 – 15:24 /

**Compressive strength of MTA mixed with distilled water in different temperatures**

*\*Deniz Sungur D, Eymirli A, Uyanık Ö, Nagas E*

15:24 – 15:42 /

**An in-vitro micro-CT study of void presence in single rooted 3D printed teeth obturated with Bioceramics and hydraulic condensation with four different sealer dispersion techniques**

*Sarvestani M, Sturrock C, Seoudi N, Almasri M, \*Prichard J*

15:42 – 16:00 /

**Effectiveness of different irrigation techniques on dentinal tubule penetration of bio ceramic-based endodontic sealer**

*\*Atav Ateş A, Ciftcioglu E, Arıcan Öztürk B, Küçükay S*

16:00 / **CONGRESS ENDS**

## / HALL 6

09:00 – 16:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

#### **Parametric Design Analysis: A New Tool for Instruments Design Optimization**

*\*Galal M*

09:18 – 09:36 /

#### **Withdrawn**

09:36 – 09:54 /

#### **How apical torsional loads influence the cyclic fatigue resistance of NiTi instruments**

*\*Iacono F, Pirani C, Peters OA, Bianchini C, Zamparini F, Prati C*

09:54 – 10:12 /

#### **A new flat side design instrument: pros and cons**

*\*Seracchiani M, Morese A, Gambarini G, Testarelli L*

10:12 – 10:30 /

#### **Effect of glide path creating on cyclic fatigue resistance and preparation time of Reciproc Blue nickel-titanium files**

*\*Miçooğulları Kurt S, Serefoglu B*

10:30 – 11:00 / **COFFEE-BREAK**

11:00 – 11:18 /

#### **Assessment of torque life of rotary endodontic instruments in torque sensitive reciprocation kinematics using an indigenous dynamic load model**

*\*Suresh N, J S H, Natanasabapathy V*

11:18 – 11:36 /

#### **Comparison of the cyclic fatigue resistance of nickel-titanium rotary instruments manufactured using controlled memory wire**

*Ibrahim MM, \*El-Tantawi AR, Badr AE*

11:36 – 11:54 /

#### **From Lussi's Non-Instrumental Technique to GentleWave: Facts, Challenges and the Future.**

*\*Ibrahim MS*

11:54 – 12:12 /

#### **Big shapes don't create better outcomes: Minimally invasive endodontics**

*\*Hassan N*

12:12 – 12:30 /

**A new endodontic Navigation system: pros and cons**

*\*Morese A, Stefanelli L, Di Carlo S, De Angelis F, Seracchiani M, Gambarini G*

12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 14:48 /

**Secret power of endodontic therapy**

*\*Gokmen E, Kartal N*

14:48 – 15:06 /

**The effect of surgical and nonsurgical root canal treatment on the inflammatory mediators and risk of cardiovascular diseases**

*\*Bakhsh A, Mannocci F, Moyes D, Niazi S*

15:06 – 15:24 /

**Connections between apical periodontitis and systemic diseases**

*\*Guex D*

15:24 – 15:45 /

**Effect of sodium hypochlorite volume on post operative endodontic pain in asymptomatic necrotic mandibular molars in single visit endodontics: A prospective double blind clinical trial**

*\*Ali A*

15:42 – 16:00 /

**Withdrawn**

16:00 / **CONGRESS ENDS**

## / HALL 7

09:00 - 16:00 /

### Oral presentations on freely chosen subjects

09:00 – 09:18 /

**Actinomycosis of the Maxillary Sinus leading to reinfection in treated Root canals**

*\*Aggarwal SD, Bhatavadekar NB*

09:18 – 09:36 /

**Regenerative Endodontic treatment of Avulsed Immature permanent incisors with apical pathosis: 7 years follow up**

*\*Ismail AG*

09:36 – 09:54 /

**Endodontic management of complex root canal anatomies using unconventional treatment modalities- A series of case reports**

*\*Mahajan S*

09:54 – 10:12 /

**Evaluation of 2 shaping systems and 2 ultrasonic irrigation devices in removing root canal filling material from mesial roots of mandibular molars assessed by micro CT**

*\*Kaloustian MK, Nehme W, Zogheib C, Naaman A, Diemer F*

10:12 - 10:30 /

**Effect of third dimension on Broken instrument decision making**

*\*Ghobashy A*

10:30 – 11:00 / **COFFEE BREAK**

11:00 – 11:18 /

**Saving incisors with a big periapical lesion by non-surgical retreatment: a case report**

*\*Mammadli M, Bücher K, Diegritz CH, Hickel R*

11:18 – 11:36 /

**3D RETREATMENT: Efficiency and Effectiveness**

*\*Dhaimy S*

11:36 – 11:54 /

**Demographic, clinical and radiographic data of patients referred for root canal retreatment**

*\*Keles A, Askerbeyli Ors S, Uzunoglu Ozyurek E*

11:54 – 12:12 /

**Comparative evaluation of the treatment outcomes after single- versus two-visit retreatment: a clinical study**

*\*Kandemir Demirci G*

12:12 – 12:30 /

**Selective root canal retreatment - case series and decision making**

*\*Guerreiro Viegas O, Jautze AA, Thé WTH*



12:30 – 13:30 / **LUNCH**

13:30 – 14:30 / **POSTER PRESENTATIONS / TRADE EXHIBITION**

14:30 – 14:48 /

**Comparative evaluation of effectiveness of contemporary instrument retrieval systems and its effect on fracture resistance of teeth**

*Talwar ST, \*Nawal RR, Malhotra A*

14:48 – 15:06 /

**Withdrawn**

15:06 – 15:24 /

**Sandwich technique for wire-splinting of traumatized teeth: preliminary clinical experience**

*\*Kaur A, Logani A, Ramnani H, Moidu N*

15:24 – 15:42 /

**Interdisciplinary approach for the Management of Subgingival Crown Fracture: Case Reports**

*\*Chauhan S*

15:42 – 16:00 /

**Mouthguards use in prevention of sport-related traumatic teeth injures**

*\*Dydyk NM*

16:00 / **CONGRESS ENDS**

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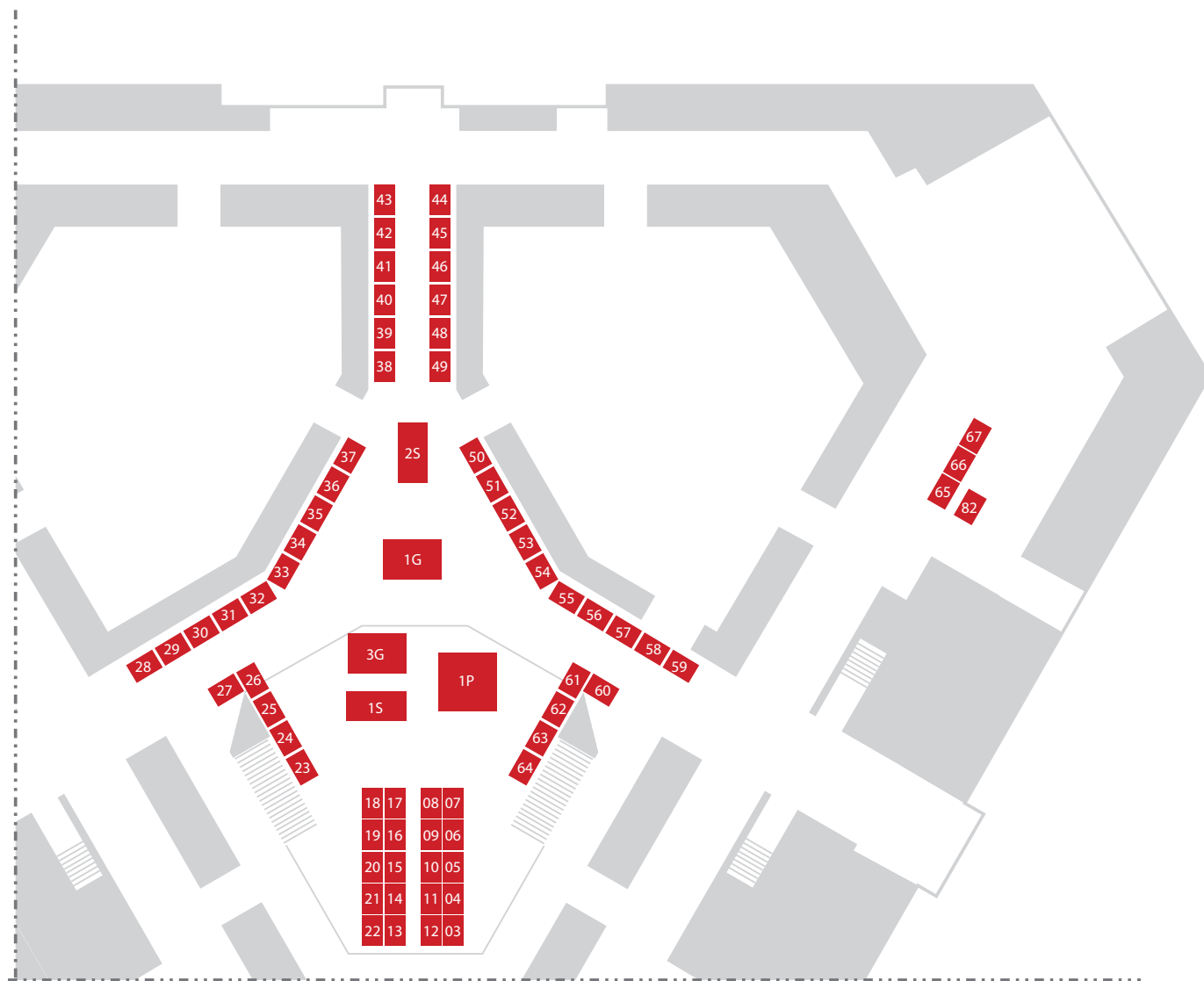
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