



CONGRESS PROGRAM  
AND HANDBOOK

# 20th WORLD CONGRESS ON DENTAL TRAUMATOLOGY

15-18 AUGUST 2018, SAN DIEGO, CALIFORNIA

This Congress Is Proudly Hosted By:



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## WELCOME FROM THE CONFERENCE ORGANIZING CO-CHAIRS

On behalf of the Conference Organizing and Scientific Program Committees, we extend an enthusiastic welcome to the delegates to the 20th World Congress on Dental Traumatology.

The International Association of Dental Traumatology and the American Association of Endodontists have joined forces to hold the most comprehensive, wide-ranging and educationally diverse conference on dental trauma ever held anywhere in the world. The Program Committee has done a superb job in molding the 4 days of the conference into an in-depth exploration of the life cycle of dental traumatic injuries starting with the initial injury and extending all the way through to multi-decades follow up. Using a variety of educational venues and methods, including keynote and concurrent speakers, small group discussions led by internationally renowned experts, workshops, an Educators Forum and competitive oral research, case reports, and posters, the field of dental trauma will be presented as never before for the practitioner, student, and educator. A host of vendors and exhibitors will provide the delegates with a wide array of the latest equipment, armamentaria, clinical materials and educational media to meet the clinician's needs for the latest diagnostic and treatment modalities for the dental trauma patient. On the social side, two informal receptions and an evening Gala Dinner Cruise around San Diego Harbor, featuring first class cuisine, entertainment, and great vistas, will enhance collegial interaction and enjoyment.

We hope you will take full advantage of this truly unprecedented opportunity in one of the most entrancing cities in the United States to join your colleagues in gaining a storehouse of knowledge and knowhow to better serve the dental trauma patient.

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**M. Lamar Hicks, DDS, MS, FACD, FICD, FIADT**  
Co-chair (IADT), Conference Organizing Committee

**Fabricio Teixeira, DDS, MS, PhD**  
Co-chair (AAE), Conference Organizing Committee

This 2018 joint meeting will offer its participants a wealth of educational opportunities, but also great opportunities to meet colleagues and start / maintain relationships in a wonderful atmosphere.

So welcome to the WCDT 2018 meeting in San Diego, and enjoy our time together in the interests of our deserving patients.



# HOST ASSOCIATIONS

**The International Association of Dental Traumatology (IADT)**

**American Association of Endodontists (AAE)**



# COMMITTEES

The Congress Organising Committee is represented by the following members of the host associations:

**The International Association of Dental Traumatology (IADT)**

Dr. Lamar Hicks (Co-Chair)  
Dr. Nestor Cohenca  
Dr. Asger Sigurdsson

**American Association of Endodontists (AAE)**

Dr. Fabricio Teixeira (Co-Chair)  
Dr. Jeffrey Albert  
Dr. Melissa Drum

The Scientific Program Organising Committee is represented by the following members:

**The International Association of Dental Traumatology (IADT)**

Dr. Liran Levin (Co-Chair)  
Dr. Peter Day  
Dr. Anne O'Connell

**American Association of Endodontists (AAE)**

Dr. Roberta Pileggi (Co-Chair)  
Dr. Paul Abbott  
Dr. Tim Kirkpatrick



# CONGRESS VENUE

## **MANCHESTER GRAND HYATT SAN DIEGO**

1 Market Place  
San Diego, California, USA, 92101,  
T: +1 619 232 1234  
W: [manchester.grand.hyatt.com](http://manchester.grand.hyatt.com)

## **REGISTRATION AND INFORMATION DESK**

The Registration and Information Desk is located in the Coronado Ballroom Foyer (Foyer Level), and is operational during the following hours:

Wednesday 15 August - 07:30-19:00

Thursday 16 August - 07:30-19:00

Friday 17 August - 08:00-17:00

Saturday 18 August - 08:00-17:00

## **SPEAKER REQUIREMENTS**

Speakers are required to submit and preview their presentations two hours prior to their session. Please submit your presentation to the AV desk the day prior to your time slot, or no later than Two (2) hours prior to the start of the morning session on the day of your time slot to ensure enough time for review and test. AV Desks are in the presentation rooms during all hours of the congress.

## **TRADE EXHIBITION AND POSTERS**

The Congress Trade Exhibition and Posters are located in Coronado Ballroom (access via Foyer Level) and open during the following hours:

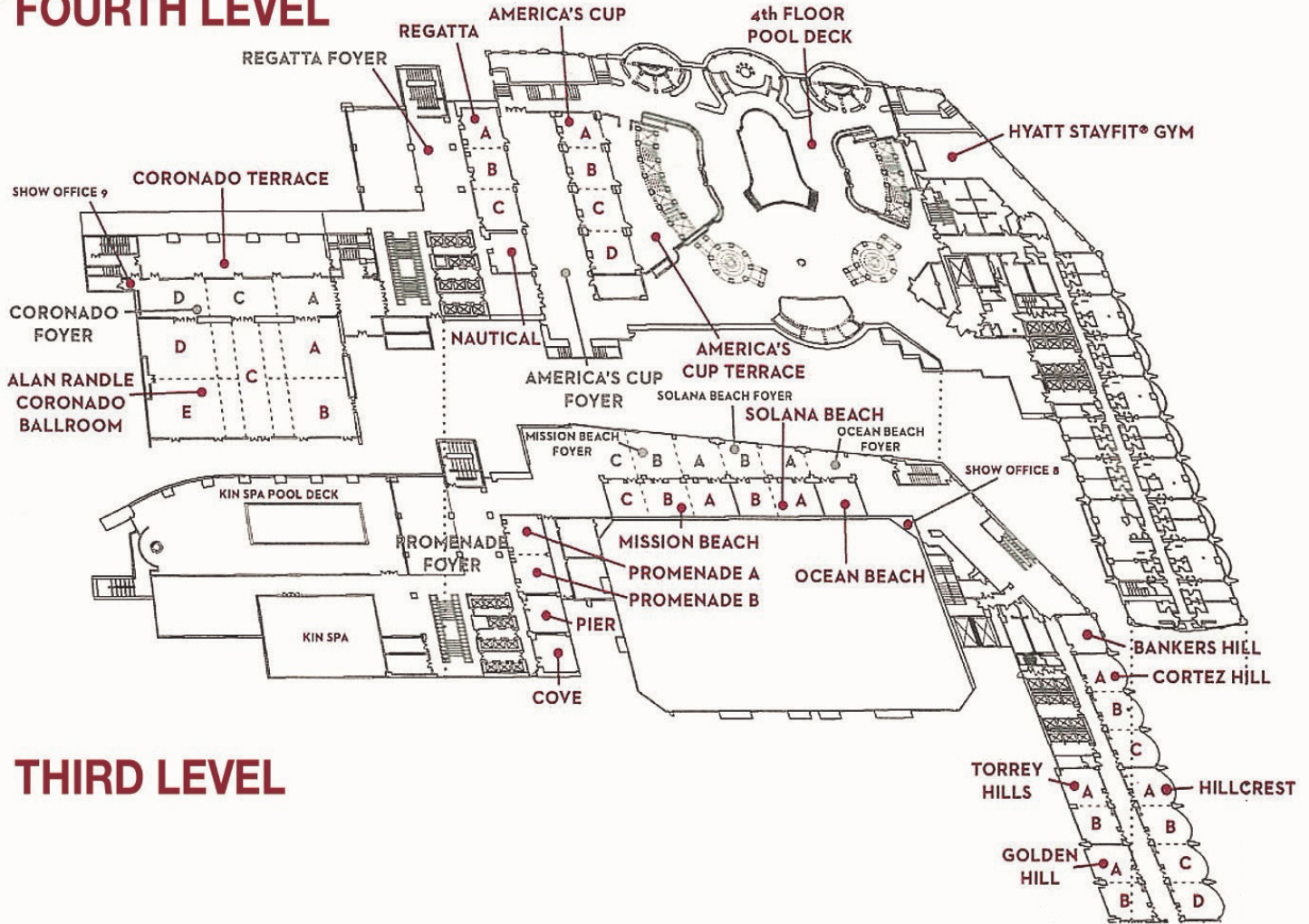
Thursday 16 August - 09:00-19:00

Friday 17 August - 09:00-17:00

Saturday 18 August - 08:00-17:00

# MAP

## FOURTH LEVEL



## THIRD LEVEL

- Registration & Information Desk
- Trade Exhibition & Posters
- Plenary Sessions
- Concurrent Sessions
- Educators Forum
- Lunch and Learn Sessions
- Welcome Reception
- Conference Dinner Cruise

- Coronado Foyer
- Coronado AB
- Coronado DE
- Regatta, Americas Cup AB, Americas Cup CD, Coronado D, Coronado E
- Coronado E
- Seaview (Lobby Level)
- Coronado AB
- Hotel Lobby at 6:45pm

# GENERAL INFORMATION

## BANKING FACILITIES – ATMS

The Manchester Grand Hyatt has two automatic teller machines located in the Hotel Lobby.

## BUSINESS SERVICES

Business support services, such as photocopying and printing, are available through the FedEx located inside the Manchester Grand Hyatt, located at the Hotel Lobby. This service is available Monday-Friday 7:00AM-7:00PM.

## CAR PARKING

The Manchester Grand Hyatt provides undercover parking for 1500 vehicles, with direct lift access to the centre's convention and exhibition facilities. The closest car park for the WCDT 2018 Congress is the Hyatt Parking Structure, accessed via Market Street.

## CHILDCARE

Please note no official arrangements have been made for childcare during the congress. Please check with the hotel as they should be able to assist you with child minding services.

## CLIMATE

August in San Diego is the month of summer with temperatures becoming warmer at approximately 75–85 degrees fahrenheit on average.

## DAILY CATERING

All catering will be served in the exhibition area, Coronado AB.

## DISCLAIMER

The WCDT Congress, including the Congress organisers, will not accept liability for the damages of any nature sustained by participants or their accompanying persons for loss or damage to their personal property as a result of WCDT Congress and Exhibition or related events. All details contained in this handbook are correct at the time of printing. I acknowledge and consent that during my attendance at the WCDT Congress 2018 my image or voice may be recorded via video, photograph or by any other means ("recorded") by an officer or official of the WCDT, which may be distributed or published at the discretion of the WCDT. If you do not wish to be recorded, you are required to formally advise the WCDT.

## EMERGENCY RESPONSE

In the case of an emergency in the conference, please stay calm. Please follow the instructions given by the Manchester Grand Hyatt staff, who are fully trained for an emergency situation. All security and building services staff are qualified first aiders. If you do have an emergency while in the hotel, please proceed to pick up an in-house telephone and dial "8". Let security know the details/location of the emergency and they will respond.

## INSURANCE

Delegates are strongly advised to secure appropriate travel and health insurance. Delegate registration fees do not provide any such insurance coverage. The Congress Organising Committee and the Congress Office accept no responsibility for any loss in this regard.

## INTERNET

Public WIFI is not available at the conference venue

## LANGUAGE

The official language of the congress is English.

## NAME BADGES AND SECURITY

All delegates will receive a name badge upon registration. This badge is the official pass and must be worn to obtain entry to all Congress sessions, including social events and associated activities. We aim to run a safe and secure Congress, please assist by letting us know in advance if you have any personal security concerns.

## MEDICAL SERVICES

Emergency telephone numbers:  
Police / Fire / Ambulance: 911  
The nearest public hospital casualty department is at the Scripps Mercy Hospital San Diego, 4077 Fifth Ave, San Diego, please contact (619) 294-8111.

## SMOKING POLICY

The Manchester Grand Hyatt is a non smoking venue.

## SPECIAL REQUIREMENTS

Every effort will be made to ensure delegates with special needs are catered for. To assist us with ensuring your attendance at Congress is a pleasant and comfortable one please specify any special requirements when Registering.

## TIME ZONE

San Diego's time zone is PST UTC-8 hours.

## USEFUL TELEPHONE NUMBERS

### TAXIS

San Diego Airport Taxi (858) 227-9272

### AIRPORT

San Diego International Airport (619) 400-2404



# GET THE MOST OUT OF OUR CONGRESS WITH THE WCDT2018 APP

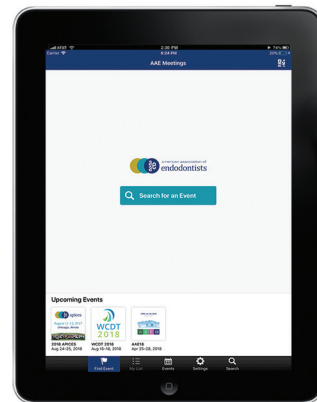
## 1. Download the AAE Meetings app



Search for “**AAE Meetings**” in the Apple App Store or Google Play Store.

INSTALL and OPEN the app then “SEARCH” for “WCDT 2018”

CLICK to launch.



Search for an Event

Search:  
**WCDT 2018**

## 2. Login to the WCDT 2018 event app



New Users: Click ‘**Create Account**’ and enter the event code below. Enter your name and email address to create an account and log in to the app.

**Event Code: WCDT**

If you have already created an account, click ‘**Login**’ and enter the password that was emailed to you.



## 3. View the schedule and take notes

Find the session you want by clicking the Schedule tile and selecting a browsing menu. Use the note-taking mode to type your notes during a session.

### No mobile device? No Problem.

As long as you have an internet connection, you can take notes on presentations through your laptop via this link:

<https://tinyurl.com/WCDT2018>



International Association  
of Dental Traumatology

# SOCIAL PROGRAM

## **WEDNESDAY, AUGUST 15, 2018** **17:00-19:00 Welcome Reception**

We invite you to pick up your congress packets and mingle with the WCDT2018 attendees while taking in the beautiful San Diego views. Hors d'oeuvres and drinks will be served.

Price: \$0 *The Welcome Reception is included in your congress registration fee.*

## **THURSDAY, AUGUST 16, 2018** **17:30-19:00 Poster Session and Exhibit Reception**

Join your colleagues in the Exhibit Hall for a fun-filled happy hour and networking opportunity. We encourage attendees to take the time to browse and visit the various exhibit booths. During this time, poster presentations will be on display for review.

Price: \$0 *The poster session and reception are included in your congress registration fee.*

## **FRIDAY, AUGUST 17, 2018** **19:00-22:30 Congress Dinner Event**

Make plans to attend the WCDT2018 Dinner Event as we board a beautiful chartered yacht for a sunset bay cruise, dinner and an evening of dancing. Take in the atmosphere and catch up with your colleagues.

Price: \$150.00 Includes bay cruise and dinner  
Dress: Business Casual







# KEYNOTE SPEAKERS



## PROFESSOR LARS ANDERSSON

Dr. Andersson completed undergraduate and research training at the Karolinska Institute in Stockholm, Sweden and became Specialist in Oral and Maxillofacial Surgery 1981. He defended his doctoral thesis in 1988 on

experimental and clinical studies on replantation of teeth and was appointed Docent in 1990. In the 1990s he chaired a national specialist training program in Oral and Maxillofacial Surgery and directed an international implant training program. During the period 2002-2017, he was Professor in Oral and Maxillofacial Surgery at Kuwait University and since 2018 at Malmö University, Sweden. His main areas of clinical and research interests are trauma, orthognathic and implant surgery and he has published more than hundred articles in international Medline indexed scientific journals. Dr. Andersson has been textbook editor of four textbooks and chapter author in several textbooks in the fields of both Trauma and Oral and Maxillofacial Surgery. He was Editor-in-Chief of the scientific journal, Dental Traumatology from 2007-2015 and President of the International Association of Dental Traumatology 2011-2014.



## DR JENS OVE ANDREASEN

Dr. Andreasen received his dental degree from the Royal Dental College, Copenhagen, in 1959. He did his postgraduate training in Oral and Maxillofacial Surgery at the University Hospital in Copenhagen where he now is an Associate Professor. Dr.

Andreasen has authored 400 publications and 12 textbooks, covering topics such as dental traumatology, tooth replantation and auto transplantation, tooth eruption and tooth impaction. In relation to traumatology the Textbook and Color Atlas of Dental Traumatology is now in its 5th edition and includes 62 contributors. In 2008 he founded the interactive Dental Trauma Guide. It contains information of a series of prospective long-term studies of all types of traumatic dental injuries carried out at the trauma center and information from 50 animal experiments reproducing treatment scenarios of various dental traumas affecting primary as well as permanent teeth. Dr. Andreasen has received four honorary doctorate degrees and has lectured in 49 countries.



## DR FREDERIC BARNETT

Dr. Barnett received his DMD degree in 1978 and his Certificate in Endodontics in 1981, both from the University of Pennsylvania, School of Dental Medicine. He received his Board Certification in Endodontics in 1988, has served as the Director of Postdoctoral Endodon-

tics at the University of Pennsylvania, and is currently the Chairman of the Department of Dental Medicine and Chairman and Program Director of the IB Bender Postdoctoral Endodontic Program at Albert Einstein Medical Center in Philadelphia. Dr. Barnett has written numerous scientific and clinical papers and has lectured nationally and internationally on the Treatment of Endodontic Infections, Revascularization, Dental Trauma, Root Resorption and Contemporary Endodontic Treatment. Dr. Barnett is a Fellow of the International Association of Dental Traumatology, the International College of Dentists and the American College of Dentists. He currently serves on the Advisory Board of the Dental Traumatology Journal, is a Director of the International Association of Dental Traumatology and is Associate Editor of the Journal of Endodontics. Dr. Barnett has been in private practice in Endodontics from 1981-2011.



## DR NESTOR COHENCA

Dr. Cohenca completed the endodontic program at the Hebrew University in Jerusalem cum laude and received the Best Graduate Student Award. He then served 11 years on faculty at the school while maintaining a private practice limited to endodontics. Thereafter, Dr.

Cohenca joined the University of Washington where he completed his endodontic certificate in 2008 and served as Tenured Professor of Endodontics and Pediatric Dentistry from 2005-2014. He served as Director of Endodontics and the Multidisciplinary Traumatology Unit at the School of Dentistry, the Center for Pediatric Dentistry, and Seattle Children's Hospital. Currently he serves as Affiliate Professor at the University of Washington, Professor and Seattle Children's hospital and maintains a private practice limited to Endodontics in Seattle and Everett, WA. He is a Diplomate of the Israel Board of Endodontics and the American Board of Endodontics. Dr. Cohenca is a Fellow of the IADT and received an honorary membership to Omicron Kappa Upsilon National Dental Honor Society. He has published more than 80 peer-reviewed articles, 10 chapters and a new book entitled "Disinfection of Root Canal Systems: The Treatment of Apical Periodontitis". Cohenca currently serves as President of the International Association of Dental Traumatology. Dr. Cohenca provided more than 200 lectures around the world and is well known as one of the experts in dental traumatology, Endo-Pedo related topics, vital pulp therapy, CBCT and root canal disinfection.



### DR ELI ELIAV

Dr. Eliav is a professor and the Director of the Eastman Institute for Oral Health at the University of Rochester Medical Center and the Vice Dean for Oral Health within its School of Medicine and Dentistry. Dr. Eliav was previously the Chair of the Department of

Diagnostic Sciences, the Director of the Center for Temporomandibular Disorders and Orofacial Pain and Carmel Endowed chair in Algesiology at Rutgers School of Dental Medicine, part of Rutgers University. Eli earned his Dental Degree (1991), MSc (1995) and PhD (2004) from the Hebrew University and Hadassah in Jerusalem. He specialized in Oral Medicine at the Hebrew University, Hadassah Jerusalem, Israel (1991-1995) and trained in Clinical and Basic Science Research Program in the National Institute of Health Bethesda, Maryland, USA (1995-1997). Since 2008 he is the Editor in Chief of Quintessence International. Dr. Eliav published numerous research and clinical manuscripts in scientific and clinical journals. His research is focusing on orofacial pain, quantitative sensory testing, neuropathic pain, pain modulation, transition from acute to chronic pain and the role of inflammation in Neuropathic pain.



### DR ASHRAF FOUAD

Dr. Fouad obtained his DDS, Certificate of Endodontics and MS at the University of Iowa. He served as Assistant, then Associate Professor of Endodontology at the University of Connecticut Health Center from 1992 – 2004, and as Chair of the Department

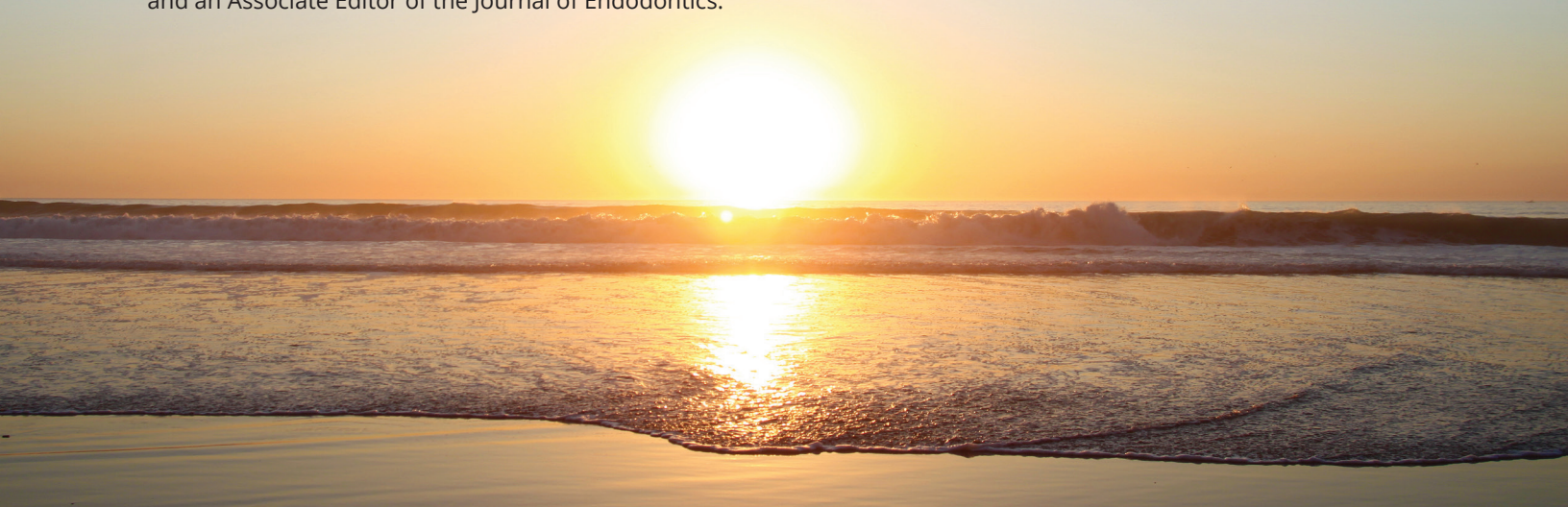
of Endodontics, Prosthodontics and Operative Dentistry at the University of Maryland, from 2005 – 2015. He has been Freedland Distinguished Professor and Chair of Endodontics at the University of North Carolina since 2016. Dr. Fouad has published over 70 manuscripts, 20 textbook chapters, over 120 abstracts, and edited and co-authored the textbooks: Endodontic Microbiology (now in its second edition) and the fifth edition of Endodontics: Principles and Practice. He is a Diplomate and Past President of the American Board of Endodontics, and an Associate Editor of the Journal of Endodontics.



### PROFESSOR MARIE THERESE FLORES

Marie Therese Flores is Professor of Pediatric Dentistry and Director of the Clinic of Pediatric Dentistry at the Graduate Dental School of the Universidad de Valparaiso, Chile. She served as President of the IADT from 2003 to

2006. She is co-author of the Guidelines for the Management of Traumatic Dental Injuries, published by the IADT in 2001, 2007 and 2012; co-author of the Andreasen's Traumatic Dental Injuries -A Manual- 1st, 2nd and 3rd edition, and has also contributed in three chapters of the Textbook of Traumatic Injuries to the Teeth, 4th ed. She is Associate Editor of the Journal Dental Traumatology. She is an active clinician at the University Clinic, a referral Centre for children and adolescents affected by traumatic dental injuries. Since 2011, she is Program Director of a 300-hour blended online Diploma in Dental Traumatology. She has developed educational campaigns to raise the awareness on prevention and immediate care of dental trauma. She is co-author of the "Save your Tooth" poster, which is available in fourteen languages at: [www.iadt-dentaltrauma.org](http://www.iadt-dentaltrauma.org). She has lectured extensively, both nationally and internationally on dental trauma. In 2012, she received the IADT recognition for "Outstanding Leadership" and in 2015 she has been selected as IADT Foundation Fellow.





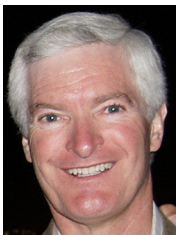
### DR CHARLES GOODACRE

Dr. Goodacre received his DDS degree from Loma Linda University and an MSD degree in Prosthodontics and Dental Materials from Indiana University. He served as Chair of Prosthodontics at Indiana University and Dean of the Loma Linda University School of Dentistry. He is a Diplomate and Past-President of the American Board of Prosthodontics, Past-President of the American College of Prosthodontists, and Past President of the Academy of Prosthodontics. He is a member of the Board of Directors of the Foundation for Oral Rehabilitation (FOR) and Chairs their Education Council. He has over 220 published articles, abstracts, textbooks, and textbook chapters. In addition, he has developed or helped develop 17 online CE courses, 11 electronic education programs, and 3 eBooks. He currently holds the title of Distinguished Professor and teaches in the Advanced Education Program in Prosthodontics at Loma Linda University and maintains a prosthodontic practice.



### PROFESSOR GEOFFREY HEITHERSAY AO

Clinical Professor Geoffrey Heithersay has been a part time academic in the discipline of Endodontology at The University of Adelaide's Dental School since 1962. Primarily a clinician he practised as a specialist endodontist until 2002. In addition to undergraduate and postgraduate teaching, he continues to be active in research particularly in the fields of dental traumatology and tooth resorption. He has 69 publications, a co-author of 7 book chapters and has been a member of the Editorial Board of Dental Traumatology since 1985. Awards include an Officer of the Order of Australia (AO) for endodontic education in 1998 and the Louis I Grossman award from the American Association of Endodontists for research in 2000. In 2009 he received three awards for excellence in teaching; the Faculty of Health Sciences Executive Dean's award, the Stephen Cole the Elder award and The University of Adelaide's Vice Chancellor's award.



### DR KENNETH HARGREAVES

Ken Hargreaves received his DDS from Georgetown University, his PhD in physiology from the Uniformed Services University, and his certificate in Endodontics from the University of Minnesota. He is professor and Chair of the Department of Endodontics and cross-appointed as professor in the Departments of Pharmacology, Surgery and Physiology at the University of Texas in San Antonio, maintains a private practice limited to endodontics and is a Diplomate of the American Board of Endodontists. Ken has received an NIH MERIT Award for research, two IADR Distinguished Scientist Awards and the AAE Louis I. Grossman Award. Ken has published more than 160 articles, two textbooks and serves as editor of the Journal of Endodontics.





### PROFESSOR LIRAN LEVIN

Prof. Dr. Liran Levin is the Head of the Periodontology Division at the Faculty of Medicine and Dentistry, University of Alberta. He is also a visiting professor at the Harvard School of Dental Medicine. Prof. Levin received his

DMD degree with distinction at Tel Aviv University and completed his Post Graduate Periodontology Program at Rambam Health Care Campus. He received his Periodontology Specialist Certificate from the European Federation of Periodontology as well as a Fellow of the Royal College of Dentists of Canada in Periodontology. Prof. Liran Levin has published more than 230 articles and book chapters in the international professional literature and is involved in research mainly in periodontology, dental implants and dental trauma. He is lecturing extensively internationally in the fields of dental implants and periodontal diseases. Prof. Levin has served as The Chairman of the Ethics in Dental Research Committee of the International Association for Dental Research (IADR). He is currently the secretary of the International Association for Dental Traumatology (IADT).



### DR GARRY MYERS

Dr. Garry Myers currently serves as the graduate endodontic program director at Virginia Commonwealth University in Richmond, Virginia. He completed his dental school education at the University of Texas Health Science Center/ at San Antonio in 1985. Fol-

lowing graduation Dr. Myers entered the USAF where he served for four years as a general dentist before entering the endodontic residency program at Wilford Hall Medical Center at Lackland AFB, also in San Antonio. In 1998 after serving on active duty for 13 years, Dr. Myers left the USAF to enter private practice in Olympia, Washington where he practiced for the next 16 years. In the summer of 2014, full time education entered the picture when Dr. Myers accepted a position at VCU where he now works. Dr. Myers has been active in organized dentistry having served as the president of the Washington State Association of Endodontists in 2006-07 and he is currently the president of the American Association of Endodontists having been involved over the last nine years with various committees of the AAE as well as serving on the Board of Directors. He has spoken internationally in both Japan and Guatemala as well as serving as a scientific poster judge at the IADT meeting in Brisbane, Australia.



### DR SIMON STORGÅRD JENSEN

DDS from the School of Dentistry, University of Copenhagen 1996, certified specialist in Oral and Maxillofacial Surgery 2004. Research fellow at the Dept. of Oral Surgery and Stomatology, School of Dental Medicine, Univer-

sity of Bern from 2001 2014. Since 2005 consultant oral and maxillofacial surgeon at the Dept. of Oral & Maxillofacial Surgery, Copenhagen University Hospital, where he is Head of the division treating patients with congenital missing teeth and early trauma-related tooth loss. In addition, he is director of the resident program. Former vice president of the Danish Association for Oral and Maxillofacial Surgery. Main research and focus areas are: Implant placement in young individuals with congenital missing teeth and trauma-related tooth loss, experimental evaluation and clinical performance of bone grafting materials, bone augmentation procedures, bone growth factors and surgical endodontics. The results have been presented worldwide in international lectures, books, and several publications in peer reviewed journals.



### DR MITSUHIRO TSUKIBOSHI

Dr. Tsukiboshi is a graduate of Osaka University School of Dentistry in 1976. He earned a PhD in dental materials from Kyoto University in 1980 and has been engaged in private practice since 1981. Dr. Tsukiboshi's interest in

dental traumatology and autotransplantation has led to extensive clinical involvement, course presentations and publications. Dr. Tsukiboshi has lectured extensively on dental trauma and autotransplantation; he has authored many articles and two textbooks, one on dental trauma in 1998 and one on autotransplantation in 2000. The books have been published in several languages, including English. Dr. Tsukiboshi is a visiting lecturer at Osaka University and Loma Linda University since 1998 and is the President of the International Association of Dental Traumatology in 2009 and 2010. Dr. Tsukiboshi is certified as an adjunctive assistant professor of Western University in USA since 2012 and a clinical professor of the dental school of Tohoku University since 2015.



# INVITED SPEAKERS



## PROFESSOR PAUL ABBOTT

Prof. Paul Abbott is the Winthrop Professor of Clinical Dentistry at The University of Western Australia. He is a Specialist Endodontist and works in private practice on a part-time basis. Prior to taking a full-time University position in 2002,

he spent 17 years in private specialist endodontic practice in Perth and Melbourne. He was Dean of the School of Dentistry at The University of Western Australia and Director of the Oral Health Centre of WA from 2003-2009. He has presented over 770 lectures and courses in 42 countries. He has published 160 articles in refereed journals and 23 textbook chapters. In 2015, he was appointed as Editor-in-Chief of the international journal Dental Traumatology. He has received numerous awards for excellence in teaching and for service to the dental profession, particularly in education and research. In 2015, he was appointed as an Officer of the Order of Australia.



## DR ZAFER CEHRELI

Dr. Cehreli is professor of Pediatric Dentistry at Hacettepe University, Ankara, Turkey, where he received his Dental Degree and Specialty Degree in Pediatric Dentistry. He has co-authored numerous peer-reviewed articles and

book chapters and has served as a reviewer or editorial board member to many international journals. He is an active member of the International Association of Pediatric Dentistry, International Association of Dental Research, and he currently chairs the Education Committee of the International Association of Dental Traumatology. Dr. Cehreli has received several national and international awards in research. His clinical and research interests include pediatric and adolescent esthetic dentistry, advanced restorative techniques, pediatric endodontics and dental traumatology.



## DR YULI BERLIN-BRONER

Dr. Yuli Berlin-Broner is the former acting head of the Division of Endodontics, Faculty of Medicine and Dentistry at the University of Alberta, Canada. Dr. Broner received her DMD degree from Tel Aviv University and completed her

Post Graduate Program in Endodontics at the Hebrew University. She is currently perusing a master's in Oral Biology. Her research focuses are the relationship between oral and general health. Dr. Broner has published several articles in the international professional journals, and she is active in knowledge dissemination by lecturing nationally and internationally.



## DR DANIELLE CLARK

Danielle Clark RDH, BSc received her Bachelor of Science degree with dental hygiene specialization at the University of Alberta and is currently pursuing a master's degree in basic sciences. She is practicing dental hygiene at the University of Alberta's Periodontology Specialty Clinic and serves as a clinical instructor within the division of periodontology. Danielle has published several research papers in the leading international journals in dentistry, dental hygiene and periodontology and has been lecturing both nationally and internationally. Danielle's research interests include periodontology, implant dentistry, tooth hypersensitivity and oral health.





### DR PETER DAY

Peter qualified from Bristol in 1997. He spent two years in general practice and hospital dentistry in Newcastle and a further year in Bolton as a senior house officer in oral and maxillofacial surgery. He started his specialist and academic training in Pediatric Dentistry in

2000 and has been in Leeds ever since. His PhD was in the field of dental trauma and was completed in 2009.

He is an author of the latest IADT and BSPD guidelines on Tooth Avulsion. In the field of dental traumatology, he has contributed to European guidelines, Cochrane reviews, national e-learning teaching tutorials and over 15 peer-reviewed publications. He was elected as an IADT Director in 2012-5 and is currently chairman of the Research Committee. With his colleague Dr. Kenny, they led the development of the Core Outcome Set for dental traumatology.



### DR ANTHONY DIANGELIS

Dr. Anthony DiAngelis is currently a professor at the University of Minnesota School of Dentistry and chief emeritus of dentistry at Hennepin County Medical Center. Throughout his academic career, Dr. DiAngelis maintained a

private practice in Minneapolis. Dr. DiAngelis is a frequent guest lecturer both nationally and internationally and has contributed numerous publications to the scientific literature, as well as having served or currently serving on the editorial boards of JADA, Dental Abstracts, Quintessence, and Dental Traumatology.

In 2007, he received the Clinical Research Award of the year from the American Academy of Periodontics for "the outstanding manuscript with direct relevance and application to the practice of periodontics". And in 2013, Dr. DiAngelis' co-authored manuscript on the safety of dental treatment in pregnant women was selected as one of only twelve "landmark" articles in its 100 years of publication. Dr. DiAngelis has served as an officer and on the board of directors of the International Association of Dental Traumatology for more than 10 years.



### DR CESAR DE GREGORIO

Dr. De Gregorio received his dental degree from the European University of Madrid in 2006. In 2008, he completed the Endodontic Program at the European University of Madrid with Honors and received the AEDE Best Research

of a Graduate Student Award. He served since from 2009 to 2013, on faculty at the school while maintaining a private practice limited to endodontics. He received the title of Active Member of the Spanish Association of Endodontics in 2011. He is active in research and has published articles in peer-reviewed journals, being author of chapters in books about Endodontics. He became Assistant Professor of the Department of Endodontics at the University of Washington in 2013 where served as a clinical assistant professor of the department of endodontics and as an endodontist at the Center for Pediatric Dentistry. Actually, he serves as a Board director of the International Association for Dental Traumatology (IADT) and is member of the committee of Research and Case Awards as well as the committee of Education and prevention. He became Sub-Director of the Graduate program in Advanced Endodontics at Universidad Rey Juan Carlos (Madrid-Spain) in 2016 and performs treatments in his private practice, limited to endodontics and dental trauma.



### DR CHRISTOPHER DENNISON

Chris Dennison is an assistant professor of mechanical engineering at the University of Alberta, A tier 2 Canada Research Chair in Biomedical Instrumentation, and a professional engineer in

the province of Alberta (Canada). His research focuses on developing instrumentation and methods for studies in trauma biomechanics. He is an active participant in the North American standards community, focusing on equipment for head protection.



### DR GIDEON HOLAN

Dr. Gideon Holan studied dentistry in the Faculty of Dental Medicine of the Hebrew University and Hadassah in Jerusalem, Israel, where he also completed his post-graduate training in Pediatric Dentistry in 1983. Holan spent a one-year sabbatical in the United States, in Columbus Ohio Children's Hospital and the Ohio State University. Main field of interest Traumatic injuries to the primary dentition. Published numerous articles related to traumatic injuries to the primary dentition. Co-author of four chapters related to traumatic injuries to the primary dentition including Andreasen's Textbook and Color Atlas of Traumatic Injuries to the Teeth. Invited lecture in dozens of congresses and seminars.



### DR BILL KAHLER

Bill Kahler maintains a full-time specialist private practice restricted to Endodontics in Brisbane, Australia. He works in a dedicated trauma clinic at Metro South for Queensland Health. In addition, Bill holds an honorary Associate Professor title at the University of Queensland. He graduated DClintDent (Endo) from the University of Adelaide and has a PhD from the University of Sydney as well as numerous Fellowships. Bill has published more than 55 papers in international dental, material science and engineering journals. His papers are cited as reference texts by the American Association of Endodontists and the International Association of Dental Traumatology for the treatment of dental trauma and regenerative endodontic procedures. Bill is a contributing author for book chapters on endodontic outcomes and dental trauma. He has lectured extensively nationally and internationally and has numerous international research collaborations. Bill also volunteers in remote aboriginal clinics as a general dentist.



### DR DOUG LAMBERT

Douglas L. Lambert graduated from the University of Minnesota Carlson School of Management and the University of Minnesota School of Dentistry where he received the Outstanding Senior Student Award and the Quintessence Award. He is a Fellow in the American College of Dentists, International College of Dentists, Pierre Fauchard Academy, Academy for Sports Dentistry, American Society for Dental Aesthetics, and a Diplomat of the American Board of Aesthetic Dentistry. He has been recognized as one of the Top Educators by Dentistry Today for 16 consecutive years and honored as a Top Dentist by Minneapolis/St. Paul and Minnesota Monthly magazines for 15 years. Dr. Lambert is a Past President of the Minneapolis District Dental Society, a Trustee to the Minnesota Dental Association for 6 years and has been a delegate to the ADA. He has authored numerous articles, presented lectures and hands-on seminars nationally and internationally, and is part of the education team for the Post-Graduate Course in Comprehensive, Esthetic and Implant Dentistry at the University of Minnesota School of Dentistry and the Catapult Group. He serves as an independent researcher for many dental manufacturers, and as the team dentist for the Minnesota Lynx of the WNBA. Dr. Lambert's practice in Edina, Minnesota emphasizes cosmetic, comprehensive, and sports dentistry. In his spare time, he enjoys relaxing with his family at their cabin in Wisconsin and playing a little golf.



### DR STEPHEN MILLS

Dr. Stephen Mills is a Board Certified pediatric Dentist and practices in Scarborough, Maine. He completed his DDS Degree at the SUNY at Buffalo School of Dentistry in 1981. After three years on active duty in the US Army he obtained

his certificate in Pediatric Dentistry at the Department of Pediatric Dentistry of the University of Connecticut in 1987 and achieved board certification in Pediatric Dentistry in 1995. Dr. Mills' current activities center on his interest in sports related orofacial injury treatment and prevention and his involvement with the Academy for Sports Dentistry (ASD). A past president and longtime board member, he is a Fellow of the ASD and was awarded the Academy's Distinguished Member Award in 2015. He lectures widely on Sports Dentistry and Athletic Mouthguards and serves as a team dentist for the University of New England.



### ANNE O'CONNELL

Anne O'Connell is the Academic Consultant and Head of Child Dental Health and Director of the PG program in Pediatric Dentistry as well as Leader of the Trauma Team in the Dublin Dental School and Hospital, Ireland. She is a Board Certified Pediatric Dentist who trained in the Eastman Dental Center

with a further degree in Cariology from the University of Rochester, New York, USA. Previous academic positions include the Eastman Dental Center, the University of Maryland and the National Institute of Dental and Craniofacial Research, Bethesda, Maryland, USA. Anne has numerous peer-reviewed publications in both basic science and clinical dentistry. Her areas of interest include restorative treatment for children, trauma, infant oral health and developmental defects of the dentition. Anne is renowned as speaker both nationally and internationally on these topics. She has extensive knowledge and clinical experience in advanced aesthetic restorative care and dental injuries in children. She is also active on numerous national and international dental and scientific committees/organizations. She is currently President-elect of the International Association of Dental Traumatology and Honorary Editor of International Association of Pediatric Dentistry. Anne also maintains a part-time private practice limited to Pediatric Dentistry in Dublin.



### DR SAMAH OMAR

Dr. Samah Omar is an Associate Professor and a full-time faculty at the Pediatric Dentistry Department at Loma Linda University (LLU), CA, USA. Dr. Omar earned her dental degree in 1999 from Jordan and completed the International Dentist Program in 2007.

She received her Certificate in Pediatric Dentistry in 2010 and was awarded master's in dental science in 2011. She has been a full-time faculty at the Pediatric Dentistry Department in LLU since 2010 where she participates in various clinical, didactic, research, and administrative activities for both the postgraduate and pre-doctoral programs. Dr. Omar is a board-certified diplomat and a fellow of the American Board of Pediatric Dentistry.



### DR RAY PADILLA

Graduated from the USC School of Dentistry in 1979. Member of the American Dental Association, California Dental Association, Dr. Padilla is on the faculty at the UCLA School of Dentistry. His involvement in Sports Dentistry includes the 1984 Olympic Games, 1994, 1999 and 2003 Work Cup Soccer, 2004 IIHF World Hockey Championships in Prague, and 2015 Los Angeles Special Olympics World Games. He is the Team Dentist for the NBA Los Angeles Lakers, MLS Los Angeles Galaxy and UCLA Athletics.

An international lecturer on cosmetic trauma treatment and injury prevention, he has lectured in Australia, Switzerland, Japan, Germany, Greece, Canada, Spain, Mexico, United Arab Emirates and numerous USA venues.

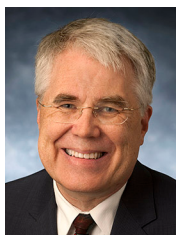




### DR CHRISTINE RIEDY

Dr. Christine Riedy is a behavioral scientist and the Delta Dental of Massachusetts Associate Professor in Oral Public Health and Epidemiology at the Harvard School of Dental Medicine (HSDM), Boston, MA. She is also the

Chair of the Department of Oral Health Policy and Epidemiology at HSDM. She holds an MA and PhD in Psychology and an MPH in Health Services with a concentration in maternal-child health from the University of Washington, Seattle, WA. Dr. Riedy's research has spanned the life course from infant to elder with particular focus on children's dental issues and behavioral implications of including quality of life and psychosocial influences. Her research endeavors have received support from the National Institute of Health (NIH) and the Health Resources and Services Administration (HRSA).



### DR ASGEIR SIGURDSSON

Asgeir received his DDS from University of Iceland in 1988 and then graduated from UNC in 1992, with endodontic certificate and MS. He was a full-time faculty at UNC from 1992-2004. From 2004 to 2012 he was in a private endodontic practice in Reykjavik, Iceland and London, UK.

In 2012 he became the Chairman of the Department of Endodontics, NYU-CD.

Dr. Sigurdsson is past President of the International Association for Dental Traumatology and is on the editorial board of Dental Traumatologia. In 2014 Dr. Sigurdsson was appointed by AAE as a Director of the American Board of Endodontics.

Dr. Sigurdsson has been invited to lecture in 44 countries all over the World, on the topics of pain, endodontics, dental trauma and/or forensic sciences. He has written or co-written over 70 peer-reviewed articles and 19 textbook chapters on same topics.



### DR FABRICIO TEIXEIRA

Dr. Fabricio Teixeira is Professor and Chair of the Department of Endodontics at the University of Iowa. He served as Director of the Advanced Education Program at the University of Texas in San Antonio, where he also obtained

his certificate in endodontics. He served as Associate Professor in the Department of Endodontics at the University of North Carolina at Chapel Hill and still maintains his appointment as adjunct faculty.

Dr. Teixeira is Diplomate and Director of the American Board of Endodontics. He is Associate Editor of Endodontic Topics, Evidence-Based Endodontics and Visual Endodontics. He is on the Scientific Advisory Board of the Journal of Endodontics and serves as reviewer for many other international journals. He has received numerous awards and has published several articles, abstracts and textbook chapters. He has lectured nationally and internationally on different endodontic subjects. He also maintains a private practice limited to endodontics in Iowa City.



### DR ROGER WISE

Dr. Wise is a faculty member and lecturer of the Departments of Orthodontics and Periodontics at Harvard School of Dental Medicine. He has presented over 200 lectures throughout the U.S. and abroad on Adult Orthodontics and the Interrelationship

of Periodontics, Orthodontics and Restorative Dentistry. He has written four textbook chapters and has authored numerous papers in refereed journals. He is one of a small number of dental specialists in the world fully trained in both Periodontics and Orthodontics. He received his dental degree at Emory University and his specialty training in Periodontics and Orthodontics at Boston University. Dr. Wise served 15 years as a consultant for the American Journal of Orthodontics and Dentofacial Orthopedics and is a Diplomate of the American Board of Periodontology. He practices Periodontics, Adult Orthodontics and Implantology in Swampscott, Wakefield and Boston.

# PROGRAM SCHEDULE

WEDNESDAY, AUGUST 15, 2018	
07:30-19:00	Registration
09:00-16:00	Elective Workshops
09:00-12:00	Workshop 1 - Regatta A <b>Facilitator: Anthony DiAngelis</b> Comprehensive Diagnostics for the Orofacial/Dental Trauma Patient: From the ABCs to Cranial Nerve Exam, Assessment of Craniofacial Structures, and More! (CE)
09:00-12:00	Workshop 2 - Americas Cup AB <b>Facilitator: Fabricio Teixeira</b> Existing Apical Barriers Tactics for Immature Permanent Teeth with Apical Periodontitis (CE)
09:00-12:00	Workshop 3 - Regatta C <b>Facilitator: Alan Atlas</b> Save the Tooth! Reconstruction of Traumatized and Other Compromised Teeth from Endodontics to Final Restoration (NO CE)
12:00-13:00	
13:00-16:00	Elective Workshops
13:00-16:00	Workshop 4 - Americas Cup AB <b>Facilitator: Bruno Azevedo</b> The Role of Advanced Imaging in Dental Traumatology (CE)
13:00-16:00	Workshop 5 - Regatta A <b>Facilitator: Danielle Clark</b> What's the Evidence? - An Evidence-Based Practice and Systematic Review Workshop for the Clinician and Researcher (CE)
13:00-16:00	Workshop 6 - Regatta C <b>Facilitator: Xavier Gutierrez, Rick Knowlton, Wayne Nakamura</b> ASD Hands On Custom Mouthguard Fabrication (CE)
17:00-19:00	Welcome Reception

THURSDAY, AUGUST 16, 2018					
07:30-19:00	Registration				
07:00-08:00	Continental Breakfast -Room: Coronado Ballroom				
08:00-08:30	Opening Ceremony				
Room	Coronado DE				
08:30-13:00	Plenary 1				
	Session Chair: Lamar Hicks				
Room	Coronado Ballroom				
08:30-09:00	<b>Jens Ove Andreasen (Copenhagen, Denmark)</b> Dental Traumatology - An Overarching Perspective				
09:00-10:15	<b>Lars Andersson (Sweden)</b> Oral and Maxillofacial Injuries - Beyond the Teeth				
10:15-11:00	Coffee Break				
11:00-13:00	Plenary 2				
	Session Chair: Fabricio Teixeira				
Room	Coronado DE				
10:45-11:45	<b>Garry Myers (Richmond, VA USA)</b> Evaluation and Diagnosis of the Traumatized Dentition				
11:50-13:00	<b>Nestor Cohenca (Seattle, WA USA)</b> Diagnostic Imaging for Trauma Patients - Where Are We Today?				
13:00-14:30	Lunch and Commercial Exhibits				
14:30-15:15	Concurrent 1A Session Chair: Cesar de Gregorio	Concurrent 1B Session Chair: Peter Day	Concurrent 1C Session Chair: Alex Mule	Concurrent 1D Session Chair: Anne O'Connell	Concurrent 1E Session Chair: Jeffery Albert
Room	Regatta	Americas Cup AB	Americas Cup CD	Coronado D	Coronado E
	<b>Danielle Clark (Edmonton, Canada)</b> Systematic Reviews for Best Evidence in Dental Traumatology - A Dream?	<b>Oral Research Reports</b>	<b>Oral Research Reports</b>	<b>Zafer Cehreli (Ankara, Turkey)</b> The Role of Pediatric Dentists in Dental Trauma	<b>Christine A Riedy (Boston, MA USA)</b> Dental Trauma and Quality of Life
15:15-16:00	Concurrent 2A	Concurrent 2B	Concurrent 2C	Concurrent 2D	Concurrent 2E
Room	Regatta	Americas Cup AB	Americas Cup CD	Coronado D	Coronado E
	<b>Alan Gluskin (San Francisco, CA USA)</b> The Law: Critical Considerations for the Clinician and the Trauma Patient	<b>Oral Research Reports</b>	<b>Oral Case Reports</b>	<b>Gideon Holan (Jerusalem, Israel)</b> Pulpal Aspects of Traumatic Injuries to Primary Incisors	<b>Fred Barnett (Philadelphia, PA USA)</b> Trauma in Adults
16:00-16:30	Coffee Break				
16:00-17:30	Trade Exhibition and Poster Set-up Room: Coronado Ballroom				
16:30-17:30	Plenary 3				
	Session Chair: Asgeir Sigurdsson				
Room	Coronado DE				
16:30-17:30	<b>Liran Levin (Edmonton, Canada)</b> In the Dental Implant Era - Why We Bother Saving Teeth?				
17:30-19:00	Exhibit Reception and Poster Reception				



FRIDAY, AUGUST 17, 2018					15:15-16:00	Concurrent 4A	Concurrent 4B	Concurrent 4C	Concurrent 4D	Concurrent 4E
Room					Regatta	Americas Cup AB	Americas Cup CD	Coronado D	Coronado E	
08:00-17:00	Registration									
07:30-08:30	Continental Breakfast Room: Coronado Ballroom									<b>**Educators Forum (cont'd)**</b>
09:00-17:00	Trade Exhibition and Poster Exhibition									The Spectrum of Dental Trauma Education – Strategies for Teaching Students, Colleagues, and the Public
08:30-10:30	Plenary 4									<b>Ray R. Padilla:</b> Marketing your Practice Through Sports Dentistry
	Session Chair: Agneta Robertson									<b>Leif K. Bakland:</b> Team Work on Dental Trauma Among Advanced Education Programs
Room	Coronado DE									
08:30-09:30	Marie Therese Flores (Valparaiso, Chile) How Does Orofacial Trauma in Children Affect the Developing Dentition? Long Term Treatment and Associated Complications				Cesar de Gregorio (Madrid, Spain) The Role of Function in Post-Traumatic Healing	Fabricio Teixeira (Iowa City, IA USA) Clinical Management of Non-Vital Traumatized Immature Teeth in the Bioceramic Era	Anne O'Connell (Dublin, Ireland) Primary teeth – Extract? Retain? Replace?	William Kahler (Brisbane, Australia) Splinting in Dental Trauma		
09:30-10:30	Ashraf Fouad (Chapel Hill, NC USA) Microbiological Aspects of Traumatic Injuries									
10:30-11:00	Coffee Break									
11:00-13:00	Plenary 5									
	Session Chair: Melissa Drum									
Room	Coronado DE									
11:00-12:00	Simon Storgård Jensen (Copenhagen, Denmark) Timing of Implant Treatment after Dental Traumatic Injury									
12:00-13:00	Charles Goodacre (Loma Linda, CA, USA) Unique Prosthetic Solutions for Restoring Trauma Cases									
13:00-14:30	Lunch									
13:00-14:15	Lunch and Learn				16:00-16:30	Coffee Break				
14:30-15:15	Concurrent 3A	Concurrent 3B	Concurrent 3C	Concurrent 3D	Concurrent 3E	16:30-17:30 Plenary 6				
	Session Chair: Roberta Pileggi	Session Chair: Yuli Berlin-Broner	Session Chair: Linda Levin	Session Chair: Adeleke Oginni	Session Chair: Leif Baklar	Session Chair: Garry Myers				
Room	Regatta	Americas Cup AB	Americas Cup CD	Coronado D	Coronado E	Coronado DE				
						16:30-17:30 Fred Barnett (Philadelphia, PA USA) Trauma Related Root Resorption				
						19:00-23:00 Conference Dinner				
						<b>**Educators Forum**</b> The Spectrum of Dental Trauma Education – Strategies for Teaching Students, Colleagues, and the Public <b>Jens Andreason:</b> Sharing Dental Trauma Information Worldwide <b>Samah Omar:</b> The Role of Dental Trauma in the Predoctoral Curriculum <b>Anthony DiAngelis:</b> Preparing Hospital Dental Residents for Patients with Traumatic Dental Injuries				
	Roger J. Wise (Swampscott, MA USA) Multidisciplinary Approach to the Management of Dental Alveolar Trauma	Simon Storgård Jensen (Copenhagen, Denmark) Surgical Treatment Options in Young Patients Where Traumatized Teeth Cannot be Preserved	Nestor Cohenca (Seattle, WA USA) Decoronation and the Endodontist's Role in the Preservation of Alveolar Bone in Children and Teenagers	Paul Abbott (Perth, Australia) Management of Horizontal Root Fractures						

SATURDAY, AUGUST 18, 2018	
08:00-17:00	Registration
07:30-08:30	Continental Breakfast Room: Coronado Ballroom
09:00-15:45	Trade Exhibition and Poster Exhibition
08:30-10:30	Plenary 7
	Session Chair: Lars Andersson
Room	Coronado DE
08:30-09:30	Mitsuhiro Tsukiboshi (Amagun, Aichi, Japan) Life-Long Journey with Auto-Transplantation
09:30-10:30	Kenneth M. Hargreaves (San Antonio, TX USA) Regenerative Procedures for Immature Traumatized Teeth
10:30-11:00	Coffee Break
11:00-12:00	Plenary 8
	Session Chair: Liran Levin
Room	Coronado DE
11:00-12:00	Eli Eliav (Rochester, NY USA) Acute and Chronic Pain in Trauma Patients
12:00-13:30	Lunch and Commercial Exhibits Note: Poster Teardown begins at 14:15 and concludes 15:45
13:30-14:15	Concurrent 5A Concurrent 5B Concurrent 5C Concurrent 5D Concurrent 5E
	Session Chair: Cecilia Bourguignon Session Chair: Lars Andersson Session Chair: Nester Cohenca Session Chair: Adeleke Oginni Session Chair: Fred Barnett
Room	Regatta Americas Cup AB Americas Cup CD Coronado D Coronado E
	Jens O. Andreasen (Copenhagen, Denmark) Treatment Outcomes and Complications. When and How Can They be Diagnosed, and What is their Prognosis Treated or Non-Treated
	Mitsuhiro Tsukiboshi (Amagun, Aichi, Japan) Transplant Before Implant
	Doug L. Lambert (Edina, MN USA) Stephen C. Mills (Scarborough, ME USA) Connecting for Success: The Sports Dentistry Message. How to Talk to Athletes, Coaches, Parents, Trainers and Others
	Asgeir Sigurdsson (New York, NY USA) Strategies to Prevent Secondary Injuries
	Peter Day (Leeds, UK) Core Outcome Set for Dental Traumatology

13:30-14:15	Concurrent 6A	Concurrent 6B	Concurrent 6C	Concurrent 6D	Concurrent 6E
Room	Regatta	Americas Cup AB	Americas Cup CD	Coronado D	Coronado E
	Christopher R Dennison (Edmonton, Canada) Towards Performance Requirements for Athletic Mouth Protectors	Paul Abbott (Perth, Australia) Strategies to Reduce the Consequences of Impact Trauma to the Teeth	Doug L. Lambert (Edina, MN USA) Stephen C. Mills (Scarborough, ME USA) Connecting for Success: The Sports Dentistry Message. How to Talk to Athletes, Coaches, Parents, Trainers and Others	Oral Case Reports	Yuli Berlin-Broner (Edmonton, Canada) Gen Y Dental Trauma Education for Dental Students: Real-Time, Interactive and Leading Edge
15:00-15:30	Coffee Break				
15:30-16:50	Plenary 9				
	Session Chair: Alex Moule				
Room	Coronado DE				
15:30-16:30	Geoffrey Heithersay (Adelaide, Australia) Long-Term Consequences of Trauma				
16:30-16:50	Jens Andreasen (Copenhagen, Denmark) The Future of Dental Traumatology				
16:50-17:20	Awards Presentations				
17:20-17:30	Closing Ceremony - Presidents Taylor (AAE) and Cohenca (IADT)				

Scientific Program Schedule Subject to Change. For the latest schedule, please visit the conference website:

[www.wcdt2018.com](http://www.wcdt2018.com)

Link to > Program Schedule



# LUNCH & LEARN SESSIONS

**Friday, August 17, 2018 from 13:00 - 14:15**

This part of the program is designed to offer wide-ranging, highly informative and clinically useful topics in an informal, small-group setting. To achieve this goal each facilitator will lead a small group discussion of about 60 minutes on a topic that is current, based on best evidence and will be of high value to the participants.

Last Name	First Name	Topics
Abbott	Paul	Differentiating the Different Types of Resorption
Andersson	Lars	Treatment Options When Tooth Ankylosis is Diagnosed After Trauma
Andreasen	Jens	Which is the Critical Cell Population in Relation to Healing After Trauma?
Bakland	Leif	Age-specific Management of Traumatic Dental Injuries
Bourguignon	Cecilia	Root Submergence and the Endodontist's Role in the Preservation of Alveolar Bone in Children and Teenagers
Cohenca	Nestor	3D Imaging for Dental Trauma Patients
Day	Peter	What Should I Say to my Orthodontist? Orthodontic Implications of Traumatized Teeth
DiAngelis	Anthony	Gold Standard Documentation of TDIs: Critical for Litigation/Judgements, Insurance and Dx-Tx-Prognosis-Outcomes
Flores	Marie Therese	Searching for the Gold Standard for Managing Primary and Permanent Tooth Avulsions
Fouad	Ashraf	Contemporary Guidelines for Regenerative Endodontics
Goodacre	Charles	Should a Tooth be Retained by Root Canal Treatment or Extracted and an Implant Placed
Hargreaves	Kenneth	Managing the Pain of Trauma
Hicks	Lamar	Repositioning, Replantation and Reduction (3Rs): Keys to Best Outcomes for True DT Emergencies
Holan	Gideon	Complications and Follow-up After TDI in Primary Incisors
Kahler	Bill	Efficacy of Treatment Approaches for Immature Permanent Teeth with Pulp Necrosis
Levin	Linda	When the First Guy gets it Wrong
Levin	Liran	Dental Trauma and Dental Implants: Long-Term Plan
Moule	Alex	Managing Trauma Induced Calcifications
Myers	Garry	Horizontal Root Fractures - Management Pearls
O'Connell	Anne	Toddlers, Tears and Trauma: Managing Trauma in the Primary Dentition and Managing Child and Parent Expectations
Sigurdsson	Asgeir	Contributing to the Team Managing Dental Trauma Injuries
Tsukiboshi	Mitshuhiro	Managing Exposed Pulp and Re-Bonding the Fragment Esthetically in Crown Fracture

# POSTER LISTING

Poster Board Number	Last Name	First Name	Poster Title
1	Acar	Sibel	Evaluation of Dental-Trauma, First-Aid Knowledge Levels Among Classroom Education Students
2	Albuquerque	Maria Tereza	Pulp Revascularization: First Step To Rehabilitate A Complicated Tooth Fracture
3	Almeida	Júlio	Traumatic Dental Injuries in Permanent Teeth: A Five Years Restropective Study
4	Alratty	Sahar	Revalence of Traumatic Dental Injury and Follow-up in a Metropolitan Hospital
5	Amzallag	Daniela	Conservative management in Cervical Root Fracture with Displacement of Coronal Fragment
6	Andrade	Maria Josefina	Factors Influencing Pulp Prognosis in Crown Fractures of Permanent Teeth
7	Austah	Obadah	Management of Traumatized Immature Permanent Incisor using modified Regenerative Endodontic Procedure
8	Awawdeh	Lama	Human Periodontal Fibroblasts Viability Stored in Custodiol®, Coconut and Propolis
9	Bani-Hani	Thikrayat	The Cost of Dental Trauma in Children
10	Barrera	Viviana	Replantation of Primary Teeth and Sequelae on the Successor: Preliminary Report
11	Bratteberg	Magnus	Multiple Episodes of Traumatic Dental Injuries and Related Life-Course Events
12	Bu	Namung	Forced Eruption: An Option for Crown-Root Fractured Tooth
13	Chandrasekaran	Nirmala	Sequela and Management Of Dental Traumatic Injuries
14	Chellasamy Savrimalai	Karumaran	Newer Strategies To Create Awareness Among Public Regarding Traumatic Injuries
15	Chen	Gin	The Prevalence of Diffuse Calcification in Traumatic Injuries Permanent Teeth
16	Cho	Sin-Yeon	Outcomes After Tooth Transplantation and Analysis of Affecting Factors
17	Choi	Sooji	The Conservative Approach of Mandibular Fracture in Children: Case Report
18	Cilensek	Maja	Replantation of an Avulsed Permanent Incisor in Conjunction with Mesiodens Removal
19	Cornejo Surjan	Soledad	The Exception to the IADT Protocols: Patients with Special Needs
20	<i>Canceled</i>		
21	Garcia	Fernanda	Effect of Rewetting Solutions on Fracture Resistance of Reattached Tooth Fragments
22	Garrido	Mauricio	Bioceramics and Ca(OH) <sub>2</sub> : Cellular Response of Human Apical Papilla Cells
23	Geraldino	Rogério	A Model of Care for Urgency in Dental Trauma
24	Gunay	Bashak	A Recurrent Dental Trauma Case with Undisclosed Epilepsy History
25	Imran	Zainal Abidin	Case Report Re-Attachment of Fractured Crown with 2-years Follow Up
26	Kallassalu	Liina	Management of Intruded Maxillary Incisors: A case report
27	Kargul	Betul	Flexible Spiral Wire in Management of Avulsed Tooth
28	Kim	Bansuk	Regenerative Endodontic Procedures for an Immature Mandibular Premolar in Adult
29	Kim	Dohyun	Long-term Survival of Avulsed Anterior Teeth up to 10 Years
30	Kim	Gyulim	Late Onset of Apical Periodontitis After Root Development of Traumatized Immature Permanent Incisors - Report of Two Cases



Poster Board Number	Last Name	First Name	Poster Title
31	Kim	Jung-Hoon	Orthodontic Treatment of a Patient with Missing of Maxillary Central Incisor
32	Koli	Dheeraj Kumar	Management of Dental Trauma in Anterior Jaws with Dental Implants
33	Kornerup	Ida Margarita	Consequences of Treatment Deficiency in a Dental Trauma Avulsion Case
34	Kratunova	Evelina	Management Challenges of Horizontal Root Fractures: Literature Review and Cases Report
35	Lee	Chan-Hyun	Tooth Fragment Reattachment with Fiber Post on a Complicated Crown-Root Fracture
36	Lee	Soohyuk	Management of Complicated Crown-Root Fracture with Surgical Extrusion
37	Maia	Elaine	Urgency Care of Dental Trauma in Fifteen Steps
38	Malek	Matthew	Complications in Treating Traumatized Teeth
39	Mammadli	Narmin	Management of a Complex Dental Trauma Case
40	Martínez	Catalina	Tricalcium Silicate-Based Cement in Complicated Fracture in Immature Primary Dentition
41	Maslamani	Manal	Effect of Periodontal Ligament Removal with Gauze Prior to Delayed Replantation in Rabbit Incisors on Rate of Replacement Resorption
42	Mercado	Montserrat	Retreatment of Regenerative Endodontic Procedure
43	Minetto	Rossana	Healing of Combined Injuries: Root Fracture and Avulsion of Coronal Fragment
44	Moura	Camilla	Effects of Lectin (ScLL) on Osteoclast Maturation – Preliminary Study
45	Na	YunKyung	Clinical Application of Novel Dentin-Pulp Regeneration Protein to Dentin Hypersensitivity
46	Nagata	Juliana	The Improvement of Dental Trauma Knowledge After Educational Intervention
47	Nagata	Mariana Emi	Severe Intrusion in the Primary Tooth: 6-year-follow-up Case Report
48	Odersjö	Mari Louise	Incidence of Dental Traumatic Injuries in Children a Prospective Study
49	Ogundare	Temiloluwa	A Survey of The Knowledge of Mouthguards use Among Oau Students
50	Oldin	Anna	TDI and General Unintentional Injuries Among Swedish Children - Risk Factors
51	Palermo	Guendalina	Awareness and Visualization Campaign for DTI and Mouthguard Use
52	Pereira	Andrea	Treatment Outcomes of Apexification and Revascularization in Traumatized Immature Teeth
53	Poli Harlowe	Alessandra	Dental Trauma Treatment Outcome Using Bioceramic Materials
54	Quiroz	Mariela	Dental Trauma Knowledge of Undergraduates Dentistry Students in Chile. Pilot Study
55	Ramachandran	Anil Kumar	Management of Regenerative Endodontic Procedures with a Novel Barrier Material
56	Rasool	Tayyaba	Knowledge Regarding Emergency Care of Dental Trauma Among Dental Students
57	Reymus	Marcel	3D Printed Model for Hands-on training in Dental Traumatology
58	Salinas	Alejandra	Multidisciplinary Approach in a Severe Crown-Root Fracture Histologic-Immunologic Follow up
59	Secchi	Pabla	Different Treatments for Necrotic Traumatized Immature Teeth: A Case Report
60	Segovia	Sonia	Management of Mandible Alveolar Process Fracture. A Case Report
61	Silva	Léa Assed Bezerra	Root Surface Treatment with Denosumab Improves Tooth Replantation Outcome
62	Soares	Carlos	Sequelae in Adjacent Teeth of Traumatized Incisor – Finite Element Analysis
63	Soares	Priscilla	Replanted Teeth Stored in a Newly Developed Powdered Coconut Water Formula

Poster Board Number	Last Name	First Name	Poster Title
64	Sobczak	Michal	Management and Planning of the Treatment After a Complex Dental Trauma
65	<i>Canceled</i>		
66	Staberg	Marie	Traumatic Dental Injuries in Children with Externalizing Behavior
67	Taha	Nessrin	Bleaching After Successful Regenerative Endodontics Following Complicated Crown Fracture
68	Takimoto	Koyo	Avulsed Tooth Treated Both Extraorally and Intraorally with Regenerative Endodontic Procedure
69	Thelen	Dorina Sula	Dental Traumatic Injuries in an Orthodontic Population
70	Tishkina	Olga	AutoTransplantation in Case of Congenitally Missing Bicuspid
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The Scientific Program Committee thanks all of the poster and oral report judges who generously donated their time and expertise to WCDT 2018.





# KEYNOTE AND INVITED SPEAKER ABSTRACTS

## Comprehensive Diagnostics for the Orofacial/Dental Trauma Patient: From the ABCs to Cranial Nerve Exam, Assessment of Craniofacial Structures, and More!

**Anthony DiAngelis**

**Abstract:** Traumatic dental injuries (TDIs) oftentimes involve more than what the eye can see. Do our exams and documentation reflect the full extent of our patient's injuries? This workshop will present methods to insure a thorough evaluation of craniofacial structures that may accompany a TDI. Participants will gain experience in performing a rapid cranial nerve examination, TMJ evaluation, and assessment of the underlying bony structures of the maxilla and mandible. In addition, participants will utilize a trauma checklist to insure a methodical review and identification of all injured tissues and structures. Besides its value in assuring accurate diagnosis, treatment choices and predicting prognosis, our records should serve as a strong advocate for fair compensation when settlement of an injury through litigation or insurance claim is involved.

**Learning Objectives:**

1. Explain the value of a trauma checklist.
2. Perform a cranial nerve examination.
3. Assess injuries to the TMJs and craniofacial structures.

## Existing Apical Barriers Tactics for Immature Permanent Teeth with Apical Periodontitis

**Fabricio Teixeira, D.D.S., M.S., Ph.D.**

**Abstract:** Treatment of the immature permanent tooth with apical periodontitis can be very challenging from the clinical practice execution standpoint. Most of these conditions have traumatic injuries as the major etiological factor, in which root development is interrupted due to the loss of pulp vitality. Several management methods have been recommended and compared in the literature, including placement apical barriers with either MTA or other Bioceramic materials. This workshop will include a presentation reviewing the treatment options, current evidence and their distinctive prognosis followed by a step-by-step demo thru the clinical microscope.

**Learning Objectives:**

1. Describe the etiological factors.
2. Discuss the challenges and latest evidence.
3. Identify the existing treatment methods, alternatives, and prognosis.

## Save the Tooth! Reconstruction of Traumatized and Other Compromised Teeth from Endodontics to Final Restoration

**Alan Atlas, DMD**

**Abstract:** This interactive course will cover the spectrum of treatment options for the restoration of the traumatized tooth. Participants will learn comprehensive risk assessment criteria necessary to determine the clinical requirements for successful tooth preservation. Step-by-step protocols for post selection, post and core placement, and tooth preparation will be visualized with HD video obtained with a dental microscope.

**Learning Objectives:**

1. Define essential restorative diagnostic criteria for treatment planning preservation of the traumatized tooth versus extraction and implant options.
2. Describe the when, why and how strategies to simplify placement of posts and core materials and preparation of compromised tooth.
3. Utilize live demonstration with HD microscope to assess key concepts required for improved long-term outcomes.

## The Role of Advanced Imaging in Dental Traumatology

**Bruno Azevedo**

**Abstract:** Cone Beam Computed Tomography (CBCT) imaging is one of the hot topics in dentistry today. This dynamic lecture will guide you through specific steps on how to maximize CBCT scans interpretation acquired for diagnosis of dental trauma. We will discuss the importance of advance imaging during all phases of treatment including follow up visits in comparison with 2D images. We will address common questions related to radiation dose and imaging acquisition parameters. The lecture will highlight visualization of key anatomical structures such as the anterior maxilla/mandible and the maxillary sinus and we will unveil diagnostic/imaging pearls for current and future 3D imaging users.

**Learning Objectives:**

1. Describe and the importance of CBCT imaging in dental traumatology, and common imaging findings associated with small volume high-resolution cbct scans.
2. Discuss the risk vs benefit of advanced imaging related to dose.
3. Minimize CBCT movement artifact on trauma cases.

## What's the Evidence? – An Evidence Based Practice and Systematic Review Workshop for the Clinician and Researcher

**Danielle Clark, BSc, RDH, MSc**

**Abstract:** As clinicians, we are responsible for implementing current evidence-based treatment practices for our patients. Therefore, it becomes critical that clinicians understand what evidence based practice really means. Unfortunately, not all evidence is equal and not every conclusion of a journal article should be implemented for dental trauma or other patients. As a result, critically interpreting evidence becomes a valuable part of a clinician's responsibilities. The highest level 2 of evidence includes systematic reviews and meta-analysis. The purpose of this workshop is to introduce the clinician and researcher to the principles of evidence-based practice, how to conduct a basic systematic review, and how to implement evidence into the day-to-day practice. Active participation and practice of a systematic evidence search and review of a dental trauma topic will be an integral part of the workshop. Participants should bring their laptops to the workshop.

### Learning Objectives:

1. Describe the different levels of evidence and the purpose of a systematic review.
2. Develop research questions for a systematic review in dental trauma and perform a systematic search in several databases.
3. Critically appraise, screen and interpret research articles D6.

## ASD Hands On Custom Mouthguard Fabrication

**Rick Knowlton, DMD, MAGD, FADI,  
Wayne Nakamura, DDS, Xavier Gutierrez, DDS**

**Abstract:** Beginning with a lecture by Dr. Xavier Gutierrez, participants will learn the history, evolution and types of athletic mouthguards currently available today. This class will provide a good understanding on the differences and advantages of custom pressure formed mouthguards and why the Academy for Sports Dentistry recommends their use over other types of mouthguards. Following Dr. Gutierrez' presentation, several Academy for Sports Dentistry members, led by past presidents Drs. Rick Knowlton and Wayne Nakamura, will assist the 4 participants in the fabrication of a custom pressure laminated mouthguard and demonstrate how easily this mouthguard can be made using a provided model and pressure forming machine.

### Learning Objectives:

1. Describe the advantages of pressure formed laminated mouthguards over other types of mouthguards
2. List design techniques to offer maximum mouthguard protection with ideal athlete comfort
3. Demonstrate the proper steps for a properly fitted mouthguard

## Dental Traumatology - An Overarching Perspective

**Jens Ove Andreasen, DDS, Odont. Dr. HC.**

**Abstract:** Recent epidemiologic studies have shown that in many countries more than half of all children experience a traumatic dental injury during childhood. Thus, dental trauma is now about to be more frequent than caries in some countries. Apart from frequent psychological implications traumatic dental injuries also imply significant costs for the parents and the society. Finally, our restorative treatment, in case of lost dental tissue, is far from ideal. In summary, dental trauma as a scientific discipline is in crisis.

### Learning Objectives:

1. Global perspective of traumatic dental injuries.
2. Psychological and economic aspects of traumatic dental injuries.
3. Restorative problems of restorations after trauma.

## Oral and Maxillofacial Injuries – Beyond the Teeth

**Lars Andersson, DDS, PhD, Dr. Odont**

**Abstract:** When dentists are facing patients with injuries to the oral region it is important not only to have knowledge on how to diagnose and treat traumatic dental injuries but also be up to date on principles how patients with soft tissue injuries and bone fractures in the oral and maxillofacial region are diagnosed and managed today. The lecture will give an overview of examination and emergency management of patients presenting with bone and soft tissue injuries and present some epidemiologic data on the relation of oral injuries to body injuries and consequences for the society.

### Learning Objectives:

1. Understand the epidemiology and consequences of oral injuries in relation to body injuries.
2. Examine, diagnose and have understanding how bone and soft tissue injuries are treated today.
3. Avoid and manage some complications.



## Evaluation and Diagnosis of the Traumatized Dentition

Garry L. Myers, DDS

**Abstract:** The traumatized dentition encompasses a broad spectrum of dental injury classifications. Even when immediate treatment needs to be rendered, the clinician must always begin with an initial assessment of the injured patient and dentition that results in a preliminary diagnosis. This initial assessment or evaluation process for traumatic dental injuries should include a) obtaining a thorough history of the events related to the injury itself, b) an initial clinical exam followed by a more thorough evaluation to include pulpal and periapical diagnostic testing, c) a comprehensive radiographic exam and d) establishment of a preliminary pulpal and periapical diagnosis. Once this has been completed along with any immediate emergency care, a long-term treatment plan can be formulated and followed. Understanding the differences of how traumatized teeth respond to diagnostic testing when compared to teeth with healthy pulps is essential. This presentation is geared toward outlining a comprehensive, but efficient, evaluation process done in an orderly and systematic manner. Correctly identifying the type of dental injury sustained along with establishing baseline diagnostic information will be the first step in providing the best management of care for any traumatic dental injury.

### Learning Objectives:

1. To identify key components of obtaining an accurate history related to the traumatic dental injury.
2. To develop a systematic and orderly sequence for performing a clinical exam of the traumatized dentition to include diagnostic testing.
3. To understand the benefits of various radiographic methods for evaluating the traumatized dentition.
4. To illustrate how developing a good baseline of diagnostic information can influence future follow-up evaluations and treatment.

## Diagnostic Imaging for Trauma Patients - Where Are We Today

Nestor Cohenca, DDS, FIADT

**Abstract:** Diagnosis is a term that takes on a broad definition as it relates to traumatic dental injuries having an array of presentations. Diagnostic challenges are common and clinicians' ability to correctly identify specific injuries dictates the optimal course of treatment(s). This presentation will review and outline all dental imaging techniques and their applications to traumatic dental injuries. A particular interest is given to the advancement of 3D imaging techniques and their role in diagnosis and treatment planning. The benefits of achieving a more accurate diagnosis are paramount to perfecting clinical judgments and outcomes.

### Learning Objectives:

1. Understand the clinical applications of current imaging technology in dental traumatology.
2. Review the potential benefit of CBCT technology for diagnosis and treatment plan.
3. Discuss the impact on treatment outcome and improved predictability.

## Systematic Reviews for Best Evidence in Dental Traumatology - A Dream?

Danielle Clark, BSc, RDH, MSc

**Abstract:** Systematic review and meta-analysis are deemed the highest levels of evidence to inform clinical decisions. This is the case for most disciplines. However, the field of dental trauma presents unique challenges when a systematic review is attempted. A systematic review is a process in which a defined scientific method is applied to the current literature to investigate a specific question. Normally, the best evidence arises from well-conducted clinical trials. When it comes to dental trauma, this is almost impossible. Ethically, it is difficult to conduct a clinical trial to determine the effectiveness of dental trauma treatment. This is an important concept as these injuries often occur in children and the consequences of traumatic dental injuries are life long. Because of the lack of clinical trials, a high quality systematic review is difficult to conduct. In the present literature, there are several longitudinal prospective and retrospective cohort studies available. However, due to inconsistencies in reporting, the studies are not homogenous enough to compare via meta analysis. Despite this difficulty, the International Association of Dental Trauma has compiled existing evidence in combination with expert opinion to establish current dental trauma guidelines. Furthermore, in order to increase the level of existing evidence, a core outcome set has been published. The aim of the core outcome set is to decrease the diversity in the reporting of traumatic dental injuries. If new data is released with the core outcome set in mind, perhaps a systematic review may not be a dream after all.

### Learning Objectives:

1. Understand the purpose and value of a systematic review.
2. Understand how a systematic review is conducted.
3. Understand the limitations of a systematic review in the field of dental trauma.
4. Understand the importance of using the core outcome set.

## The Role of Pediatric Dentists in Dental Trauma

Zafer C. Cehreli, DDS, PhD

**Abstract:** Dental injuries commonly occur in childhood and adolescence and may often require intervention by qualified dentists. Pediatric Dentists receive specialty training in the prevention, diagnosis, and treatment of pediatric dental injuries, and serve in a variety of settings including hospitals, educational institutions and private offices. This presentation will focus on many topics related to role that Pediatric Dentists play in the management of dentoalveolar injuries, including the value of specialty training in traumatized patients with behavior problems or special needs, emergency management and continued care during growth and development, and contributions within a multidisciplinary treatment group, and education of general dentists and public to prevent and manage acute dental trauma.

### Learning Objectives:

1. In the treatment and continued care of dental trauma in children and adolescents.
2. In affected individuals with behavior management problems or special healthcare needs.
3. Within a multidisciplinary treatment group.

## Dental Trauma and Quality of Life

Christine A. Riedy, Ph.D., M.P.H

**Abstract:** Childhood and adolescence, while periods of tremendous physical and emotional growth, have also been well recognized as high-risk stages for dental traumatic injuries. There are many causes of dental injuries amongst children and adolescents including falls, abuse, and collisions (sports- and non-sports-related) to name a few. Furthermore, continued sports play can facilitate a risk of re-injury. Globally, the prevalence of dental trauma is high – up to one-third of school-aged children have had at least one dental injury, and, of those with dental injuries, almost half experience another dental injury during this developmental period. Trauma to a child's or adolescent's orofacial region not only impacts their physical being but can have psychological and social impacts as well that can affect socialization with peers and overall well-being of the injured child or adolescent. Lastly, it is important to understand the process by which children and/or adolescents and their families manage or cope with traumatic dental injuries and the potential influences of other factors on their coping ability. This session will examine the impact of children's dental injuries on their quality of life including their psychological, social, and oral health impacts as well as parents' perceptions of the impact.

### Learning Objectives:

1. To describe the prevalence, incidence, and risk factors of dental traumatic injuries among children/adolescents.
2. To describe the impact of dental trauma on children's and adolescent's quality of life and oral health quality of life.
3. To describe the psychological and social impact of dental trauma on children and their caregiver/family.
4. To discuss the relationship between psychosocial factors and children's quality of life for children who have experienced dental trauma.

## The Law: Critical Considerations for the Clinician and the Trauma Patient

Alan H. Gluskin, DDS

**Abstract:** Trauma patients present a number of unique legal issues for the modern dental practitioner as compared with regularly scheduled patients. At the same time, fundamental legal principles apply to all patients regardless of the origin or nature of the dental condition presented. Therefore, the prudent dental provider should have a working knowledge of current dental law and the special issues presented in cases of trauma. This presentation will be taken from a clinician's perspective and will review issues concerning the standard of care, exceptions to that standard, record keeping requirements, communication and confidentiality of patient information, the doctrines of informed consent and informed refusal, referral duties, abuse reporting duties, and obligations regarding iatrogenic trauma patients while providing examples of case management and documentation. In the United States, many aspects of dental law can vary from state to state. Therefore, this presentation will offer general principles and will endeavor to point out areas where the practitioner would be well advised to consult his / her local resources, such as dental societies, professional liability carriers, state licensing agencies, or attorneys with expertise in dental law in any particular state. Rigorous attention to detailed and accurate records remains the best method for avoiding claims of substandard care. Quality evidence gathering, and maintenance are essential and should include use of both radiographic and photographic imaging. Maintaining records and graphic evidence require staff whose training is routinely evaluated and updated for quality, accuracy, and compliance with office policy. Record keeping should be uniform for staff and dentists and should always be reviewed by dentists when entered by staff. The differential diagnostic process should be well documented, unless there is a significant urgency of treatment, and then the nature and environment of the trauma must be well documented. Once treatment plans are designed and discussed with the patient, parent, or guardian, informed consent and/or refusal should be documented. Staying current with the legal requirements for trauma patients will allow today's dental practitioner to enjoy the rewards of helping such patients and still avoid the risks of a claim of substandard care.

### Learning Objectives:

1. Describe the fundamental legal principles that apply to all patients regardless of the origin or nature of the dental condition.
2. Differentiate the basic steps of documentation to be taken in cases of dental trauma, in order to save teeth and avoid legal consequences.
3. Assess and promptly refer dental trauma and oral-facial emergencies, which are beyond the scope of management in your dental practice.



## Pulpal Aspects of TDI in Primary Incisors

Gideon Holan, DMD

**Abstract:** Trauma to the teeth may have an immediate effect on the hard tissues (enamel and/or dentin) or the supporting tissues (the periodontal ligament). The pulp can be affected at the time of injury (luxation injuries, complicated crown fracture and root fracture) or it can appear as a late complication (pulp inflammation, internal resorption, pulp infection, pulp necrosis with and without infection, arrest of dentin deposition, pulp canal obliteration, tube-like mineralization and calcific metamorphosis). The condition of the pulp may be expressed clinically by coronal discoloration (yellow, dark or pink) and changes in the surrounding soft tissues (swelling, sinus track). Any treatment provided should be aimed to avoid or minimize the risk of damage to permanent successor and if possible preserve the injured primary incisor. Immediate damage to the pulp (pulp exposure) requires an immediate treatment (partial or cervical pulpotomy) that is expected to keep the remaining pulp vital and react by buildup of a dentin bridge. Some late complications have no harmful effect and can be left for follow-up. In cases of infection of the pulp, the pulp must be removed. This can be done by extraction or root canal treatment. The presentation will discuss the various conditions of the pulp and the relevant treatment for each condition.

### Learning Objective:

1. To present the various immediate and late types of pulp reaction to traumatic dental injury in primary incisors and discuss the various possibilities to handle these reactions.

## Trauma in Adults

Frederic Barnett, DMD

**Abstract:** Dentoalveolar trauma to the permanent dentition is extremely distressing to the patient and parent. These injuries often represent a complex diagnostic problem with a multitude of treatment options to choose from. As such, their management is often difficult for the dentist and often requires a multi-disciplinary approach. A traumatic dentoalveolar injury often will compromise the integrity of a previously healthy dentition and result in an unsightly appearance, affecting the self-esteem of the patient. Most injuries to the permanent dentition are caused by falls, sports-related contact, fights and motor vehicle accidents. The different kinds of tooth/root fractures and luxations may be combined in 54 different ways, each resulting in a trauma scenario with individual treatment demands and prognosis in regard to pulp and periodontal healing. This complexity explains that very few dentists in the world are fully updated on an "evidence based" approach to diagnosis and treatment of traumatic dental injuries. This presentation will review some of the more common dentoalveolar injuries and their management.

### Learning Objectives:

1. Identify some of the predisposing factors for dentoalveolar injuries.
2. Conduct a comprehensive historical review, clinical and radiographic examination.
3. Better understand the complex nature of dentoalveolar injuries.
4. Understand the need for a multidisciplinary approach to most effectively manage some injuries.

## In the Dental Implant Era - Why We Bother Saving Teeth?

Professor Liran Levin, DMD

**Abstract:** Perio-prosthetic implant treatment plan is gaining popularity with high perceived survival and success rates. Replacing a tooth with an implant is usually based on tooth prognosis evaluation and its comparison to the anticipated long-term implant survival. Different approaches for determining tooth prognosis were described in the literature. Over the past decade, the use of osseointegrated implants as a foundation for prosthetic replacement of missing teeth has become widespread. However, there is an increasing trend toward replacing diseased teeth with dental implants. In dental trauma patients, it seems that a lot of efforts are sometimes needed to save or preserve a tooth and it is tempting to turn to implant placement. This lecture will provide a reevaluation of our paradigms, beliefs and knowledge regarding both tooth prognosis evaluation and long-term implant success according to the currently available knowledge. We, as dental professionals, should avoid basing our treatment planning on thoughts and beliefs and stick as much as possible to evidence-based practice.

### Learning Objectives:

1. To understand the prognostic systems for teeth and implants.
2. To explore treatment alternatives for post-traumatic tooth injuries.
3. To be able to apply Evidence-Based approach to determine best treatment options following oral trauma.

## How Does Orofacial Trauma in Children Affect the Developing Dentition? Long-Term Treatment and Associated Complications

**Prof. Marie Therese Flores**

**Abstract:** Each year, millions of children are injured and live with the consequences of those injuries (CDC, 2012). Through infancy and childhood children may be exposed to orofacial trauma due to falls or being struck by or against objects. Even when the oral region is the second most frequently injured body area in children under 6 years of age, little is known about the long-term consequences on the developing permanent teeth. During this period, the developing permanent teeth may be directly involved after trauma, causing from mild to severe hypoplasia, displacement, damage to the tooth germ or an extended range of morpho-functional disturbances. In some cases, the effects of oral and dental injuries caused by trauma appear later in time, with the eruption of the permanent incisors when ectopic eruption, malalignments, and other developmental disturbances become visible. Therefore, a long-term follow up to the patient to diagnose and treat associated complications becomes relevant.

### Learning Objectives:

1. Recognize the impact of orofacial trauma in young children and the dentist's role in providing anticipatory guidance to parents and healthcare professionals.
2. Differentiate mild from severe disturbances affecting the developing permanent teeth following oral injuries in early childhood.
3. Recognize the importance of follow-up controls.
4. Recognize the importance of early referral to a pediatric dentist and orthodontist for diagnosis and treatment planning.

## Microbiological Aspects of Traumatic Injuries

**Ashraf F. Fouad, DDS, MS**

**Abstract:** Traumatic injuries are a major etiological factor of the devitalization of the dental pulp. The risk of pulp necrosis is less for immature teeth than mature teeth, presumably due to an increased vascular supply and potential for revascularization in immature teeth. Moreover, diagnosis of pulp necrosis following a traumatic injury is complicated by the fact that pulp sensibility testing is not reliable for up to three months. Therefore, the diagnosis may involve prolonged monitoring of patients, and may rely on the development of apical periodontitis or infection-related resorption, which are signs of an established microbial biofilm. This microbial biofilm frequently develops in the absence of direct communication between the pulp space and the external surface. This presentation will examine the microbiology of traumatic injuries, focusing on the likely sources of pulp bacteria, the types of bacteria present, the most effective methods of treatment and the outcomes of these approaches.

### Learning Objectives:

1. Understand the pathogenesis of pulp necrosis in traumatic injuries.
2. Identify optimal methods of controlling pulpal infection in these cases.
3. Learn the available data on outcomes of treatment of pulp infections following traumatic injuries.

## Timing of Implant Treatment After Traumatic Dental Injury

**Simon Storgård Jensen, DDS, MSD**

**Abstract:** Trauma-related tooth loss often occurs in growing individuals. It is well documented that placement of dental implants in the alveolar ridge before cessation of growth will lead to gradual infraposition of the implant. Strategies to determine the safe time and ideal conditions for implant placement will be presented. Also, different temporary solutions will be discussed. Timing of implant placement may also be an issue in adult patients. Advantages and disadvantages of immediate, early, and delayed implant placement will be discussed and related to the predictability of the implant treatment - functionally as well as aesthetically.

### Learning Objectives:

1. Recognize the risk of placing implants in growing individuals.
2. Describe methods to evaluate skeletal and craniofacial maturity.
3. List implant placement protocols related to the time passed after tooth loss.



## Unique Prosthetic Solutions for Restoring Trauma Cases

Charles J. Goodacre, DDS, MSD

**Abstract:** This presentation will show examples of treatments required as a result of trauma that necessitated prosthodontic treatment as well as the management of trauma-related complications that occurred following prosthodontic treatment. The clinical examples included in the presentation will show how the associated esthetic, mechanical, and biological challenges were handled from a prosthodontic perspective. Treatments will include restorations on both natural teeth as well as oral implants.

### Learning Objectives:

1. Identify prosthodontic methods that can be used to manage trauma-related complications.
2. Describe the unique techniques used to solve these trauma-related challenges.
3. Understand the differences between the management of trauma treatments that involve teeth and those that involve implants.

## Multi-Disciplinary Management of Dental Alveolar Trauma

Roger J. Wise, DDS

**Abstract:** The treatment of dental alveolar trauma should be a multidisciplinary discussion. Early mixed-dentition injuries ranging from simple displacements to advanced intrusions and avulsions will be described in detail with special emphasis on the role of each team member. Proper treatment of injuries in the developing dentition will many times prevent or lessen long-term recurrent problems related to periodontal and restorative disfigurement. Similar injuries in the adult dentition will be differentiated. Implant placement combined with hard and soft tissue management and restoration, will be demonstrated. Participants will be enlightened by the stable and esthetic results achievable when the focus is always from a multidisciplinary approach in the esthetic zone.

### Learning Objectives:

1. Utilization of the website: Dental Trauma Guide: [www.dentaltraumaguide.org](http://www.dentaltraumaguide.org).
2. Multi-Disciplinary Management of Dental Alveolar Trauma in the Developing Dentition.
3. Multi-Disciplinary Management of Dental Alveolar Trauma in the Adult Dentition.
4. Long-term Follow-up and Problems Encountered in a Lifetime.

## Surgical Treatment Options in Young Patients Where Traumatized Teeth cannot be Preserved

Simon Storgård Jensen, DDS, MSD

**Abstract:** The prognosis after traumatic dental injury is most often excellent. However, especially after intrusions and avulsions, an elevated risk of dento-alveolar ankylosis may be observed. Untreated, ankylosed teeth may end up in severe infraposition, compromising neighboring teeth and vertical growth of the alveolar process. Infection-related resorption may also lead to loss of previously traumatized teeth in growing individuals. Techniques to reduce horizontal and vertical atrophy of the alveolar ridge will be presented and indications for each technique will be discussed. The techniques include: auto transplantation, decoronation, sandwich osteotomy with interpositional bone grafts, and socket preservation.

### Learning Objectives:

1. List dento-alveolar trauma with an elevated risk of healing complications.
2. Describe clinical and radiographic signs of traumatized teeth that cannot be preserved.
3. Name techniques to reduce horizontal and vertical atrophy of the alveolar ridge.

## Decoronation and the Endodontist's Role in the Preservation of Alveolar Bone in Children and Teenagers

Nestor Cohenca, DDS, FIADT

**Abstract:** Replacement resorption and ankylosis are frequently diagnosed following avulsion and severe intrusive luxation. The treatment of ankylosed permanent incisors following dental trauma present a clinical challenge particularly when involve a growing child due to the high risk of infraposition and undevelopment of the alveolar bone. New approaches for the treatment of ankylosed teeth, including decoronation and bone augmentation for the preservation of alveolar ridge prior to the implant-based prosthetic reconstruction will be thoroughly discussed and illustrated.

### Learning Objectives:

1. Discuss dentoalveolar traumatic injuries and their complications in growing patients.
2. Recognize effective strategies for the preservation and augmentation of the alveolar ridge for final prosthetic rehabilitation.
3. Develop a comprehensive approach for the treatment of ankylosed teeth.

## Management of Horizontal Root Fractures

**Professor. Paul V. Abbott, AO, BDS, MDS, FRACDS(Endo), FPFA, FADI, FICD, FACD, FIADT**

**Abstract:** Horizontal root fractures are not a common injury, but they do present a number of challenges for their management. Teeth with root fractures generally have a good long-term prognosis but this depends on whether it is located in the apical, middle or coronal third of the root. The more apical the fracture, the better the prognosis for the tooth and also for the pulp. Root canal treatment is not often required for root fractures and should be deferred until there are definite signs of an infected root canal system. If the pulp is removed, then the opportunity for some internal repair with dentine is lost. Coronal third fractures should be further divided into those within bone (sub-osseous) or those not within bone (supra-osseous). If the fracture is located within bone, then stabilisation and long-term monitoring is often all that is required. However, supra-osseous root fractures present difficult treatment decisions. Many will require removal of the coronal fragment followed by root canal treatment and restoration with a postretained crown, but this may not always be feasible and orthodontic extrusion and/or periodontal surgery may also be required. This lecture will outline the various healing responses and management options for horizontal root fractures.

### **Learning Objectives:**

1. Describe a new classification for horizontal root fractures.
2. Understand the various responses to horizontal root fractures.
3. Outline the prognosis for teeth following horizontal root fracture according to the position of the fracture.
4. Describe the immediate management for teeth following horizontal root fracture.
5. Describe the endodontic management protocols for teeth that develop pulp necrosis and infection of the root canal system following horizontal root fracture.

## Educators Forum

### The Spectrum of Dental Trauma Education – Strategies for Teaching Students, Colleagues, and the Public

The 90-minute session will feature short (12-15 min) presentations by leading dental trauma educators from a variety of educational venues. Their presentations will contain key aspects that can help in reaching diverse dental audiences. The forum will allow participants opportunities to ask questions, share experiences and engage in discussion of the topic.

#### **Presenters:**

**Jens Ove Andreasen** – University of Copenhagen, DK:  
Sharing Dental Trauma Information Worldwide

**Samah Omar** – Loma Linda University, CA:  
The Role of Dental Trauma in the Predoctoral Curriculum

**Anthony J. DiAngelis** – Minneapolis, MN:  
Preparing Hospital Dental Residents for Patients with Traumatic Dental Injuries

**Ray R. Padilla** – Los Angeles, CA:  
Marketing your Practice Through Sports Dentistry

**Leif K. Bakland** – Loma Linda University, CA:  
Team Work on Dental Trauma Among Advanced Education Programs





## The Role of Function in Post-Traumatic Healing

César de Gregorio

**Abstract:** The consequences of a traumatic injury could range from tooth loss to developmental discrepancies of the alveolar bone. This is a major concern when treating patients of a growing age. These injuries make the tooth prone to inflammatory and replacement root resorption. Understanding how these biological responses develop and how to eliminate or mitigate them is crucial. Our main challenge is preserving the alveolar bone and minimizing the consequences of ankylosis. Function has been demonstrated as a significant factor to decrease risk of ankylosis. Flexile stabilizations or splints are suitable for this purpose, but recent studies are showing critical data. This presentation will discuss and illustrate the current protocols of the International Association for Dental Traumatology for luxated and avulsed teeth and how the results of new in vivo studies could transform these protocols in the near future.

### Learning Objectives:

1. Understand the importance of the most suitable treatment of injuries that cause severe damage to the periodontal ligament. As well as the consequences of tooth ankylosis in patients of a growing age.
2. Discuss the current guidelines of the International Association for Dental Traumatology (IADT) and their scientific basis.
3. Demonstrate the importance of function and controlled forces when applied through active stabilizations in the treatment of avulsed teeth.

## Clinical Management of Non-Vital Traumatized Immature Teeth in the Bioceramic Era

Fabricio Teixeira, D.D.S., M.S., Ph.D.

**Abstract:** In the last few years, we have noticed the incorporation of new philosophies challenging classic approaches on the endodontic treatment of immature permanent teeth with apical periodontitis. These clinical situations where the pulp becomes necrotic, oftentimes have traumatic injuries as etiological factors. They create some challenges in which the correct tactic will delineate the tooth survivability. Current biological and technological advancements have provided two main treatment alternatives, the endodontic regeneration procedures and the use of apical barriers. Moreover, the use of real-time 3D analysis has introduced ground-breaking standpoints in diagnosis and on the decision-making process, which may also affect the longterm prognosis. This presentation intends to discourse contemporary evidence-based therapies regarding apical barriers procedures utilizing Cone-beam CT, new disinfection protocols and Bioceramic materials. The rationale to incorporate limited volume CBCT, magnification, new instruments and Bioceramic materials will be discussed as well as the biological standpoints of these complex clinical conditions.

### Learning Objectives:

1. Comprehend the impact of trauma as the major etiological element for these conditions.
2. Recognize the treatment alternatives and proper approaches on immature permanent teeth with apical periodontitis.
3. Understand the benefits of CBCT, new technologies and materials.
4. Identify the paramount evidence-based treatment outcomes.

## Primary Teeth – Extract? Retain? Replace?

Anne O'Connell

**Abstract:** Immediate and long-term complications can occur following an injury to primary teeth that may also have detrimental effect on the developing dentition. Clinical decisions on the best treatment for the tooth has to be balanced with best management option for the child. Preservation of the primary incisor in an aesthetic position until eruption of the unaffected successor is the intended outcome. Developing a positive attitude to the dental setting in the child and parents is also critical to maintain follow up visits and to prepare the child to be a motivated dental attendee throughout their lifetime. The dentist has to consider many options to achieve these outcomes but may encounter barriers to achieving success along the way. The objective of this talk will be to explore the various factors that influence decision making for a young child following a dental injury.

### Learning Objectives:

After this session the participant will:

1. Be able to diagnose the various dental and luxation injuries in primary teeth
2. Identify options for each injury type
3. Define an empathetic approach in sharing information with the parents
4. Guide parents in making Decisions following injury
5. Be aware of complications if extraction is the chosen option
6. Be familiar with various prosthetic solutions for missing primary teeth

## A New Splinting Recommendation for Splinting of Traumatized Teeth

Bill Kahler, BDSc, FRACDS, MScDent, DCLinDent,  
PhD, MRACDS, FICD, FADI, FPFA

**Abstract:** With advances in the understanding of healing processes of the periodontium, pulp and alveolar bone following various injuries, the role of splinting has become relatively well defined. This is generally reflected in the guidelines for trauma management published by the International Association of Dental Traumatology. While the widespread use of composite resin as an adhesive in various functional/flexible splinting systems has over many years allowed ease of application, removal of the material is not only time consuming but more seriously is accompanied by minor or major iatrogenic damage to enamel. Dental material science has continued to provide new materials and amongst them the development of resin activated glass ionomer cement suitable for orthodontic bracket cementation has allowed the development of an alternative simplified splinting regimen for traumatised teeth which offers ease of application and removal with minimal or no iatrogenic damage to enamel.

### Learning Objectives:

1. An understanding of the history of the current IADT splinting objectives.
2. An appreciation of the types of splints that can be utilised in dental trauma.
3. An evidence-based analysis for functional splinting and duration of splinting.
4. A new splinting recommendation less damaging to enamel.

## Root Resorption: Etiology and Treatment Considerations

Frederic Barnett, DMD

**Abstract:** Root resorption is a common sequelae after traumatic injuries to the periodontal ligament and/or dental pulp. The course of root resorption involves an elaborate interaction among inflammatory cells and mediators, resorbing 'clastic' cells, and hard tissue structures. Types of tooth resorption include internal and external resorption. Internal resorption has been categorized into internal replacement and internal inflammatory resorption. External resorption has been classified into four categories by its clinical and histologic manifestations: external surface, external inflammatory, replacement and ankylosis. This presentation will address the etiology, diagnosis and clinical management of root resorption.

### Learning Objectives:

1. Understand the etiology and pathogenesis of the different types of root resorption.
2. Develop a comprehensive treatment approach for teeth with root resorption.
3. Understand the challenges involved when a tooth becomes ankylosed in the growing child.



## Life-Long Journey with Auto-Transplantation

Mitsuhiro Tsukiboshi, DDS, PhD

**Abstract:** The popularity of autotransplantation of teeth (ATT) has been getting up and down in the long dental history as is even during the short history of my practice. I have been performing more than 1,000 cases of ATT since 1986. If asked about the success rate, I may say not too good and not too bad. But it comes to real indications, no treatment can replace ATT. In this presentation, the biologic principle, the techniques and the indications are discussed.

**Learning Objectives:**

1. Participants can learn the wound healing and techniques of ATT.
2. Various indications are discussed.

## Regenerative Procedures for Immature Traumatized Teeth

Kenneth M. Hargreaves, DDS, PhD

**Abstract:** Considerable excitement exists for developing dental applications that employ postnatal stem cells and concepts of tissue engineering. Although much remains to be done to advance this field, progress has been made in clinical regenerative endodontic procedures: literally, saving teeth by regenerating a pulp-dentin complex. This lecture will describe the current status of regenerative endodontic procedures, their potential and predictors of healing success. Both clinical and basic studies will be reviewed to provide the practitioner with the latest information on this field with an emphasis on practical steps to be apply these procedures in treating selected patients. A particular focus will include recent studies on the differential outcomes in immature teeth that have undergone trauma.

**Learning Objectives:**

1. Describe the three major steps in tissue engineering and how they apply to regenerating the pulp-dentin complex.
2. Understand the clinical principles needed for regenerative endodontic procedures.
3. Be able to describe clinical outcomes of successful regenerative endodontic procedures.

## Acute and Chronic Pain in Dental Trauma Patients

Eli Eliav, DMD, MSc, PhD

**Abstract:** Pain following trauma to the dental and supporting tissues is common, and in fact is even expected to occur. The pain may be present immediately after or develop within a few days following the injury. Tooth injury may also indirectly affect other orofacial structures such as the muscles of mastication and the temporomandibular joint and induce pains. The pain intensity does not always correlate with the injury extent. In most cases, the pain will recede following dental and routine palliative treatment, as soon as healing of the affected tissue occurs. In a small number of cases the pain persists beyond healing, and occasionally may lead to misdiagnosis and additional unnecessary dental treatment. This presentation will discuss diagnosis and treatment of acute and chronic pain, as well as potential mechanisms for the transition from acute to chronic pain. Challenging cases and findings from recent studies will be presented.

**Learning Objectives:**

Upon completion of this session, attendees will learn about:

1. Treatment options for acute and chronic posttraumatic orofacial pain
2. Differential diagnosis of posttraumatic orofacial pain conditions
3. Mechanisms involved in pain transition from acute to chronic

## Treatment Outcomes and Complications. When and How Can They be Diagnosed, and What is their Prognosis Treated or Non-Treated

Jens Ove Andreasen, DDS, Odont. Dr. HC.

**Abstract:** Diagnosis of healing complications is very dependent on a structured Follow-up. In this presentation this will be presented. Pulp necrosis can usually be verified in the period 3-8 weeks after the trauma. Infection related resorption is usually diagnosed within the same period. Ankylosis becomes diagnosable after 2 to 6 months. It is often a high percussion sound that is the first sign of the ankylosis process. Untreated both resorption types will lead to final loss of the involved teeth and the speed of this process is age dependent.

**Learning Objectives:**

1. To design a follow-up system that maximize the chances of diagnosing healing complications.

## Transplant Before Implant

**Mitsuhiro Tsukiboshi, DDS, PhD**

**Abstract:** Implant is wonderful, but transplant is much more. In this presentation, the advantages of ATT over implant are discussed with showing plenty of cases.

**Learning Objectives:**

1. Participant can learn advantages of ATT over implant.
2. Intentional replantation and surgical extrusion are discussed as well.

## Connecting for Success: The Sports Dentistry Message. How to Talk to Athletes, Coaches, Parents, Trainers and Others

**Douglas L. Lambert, DDS, FACD, FASDA, ABAD**  
**Stephen C. Mills, DDS**

**Abstract:** The Academy for Sports Dentistry (ASD) was formed in 1983 by a small group of dentists who wanted to bring this niche of dentistry to the dental profession. Now as it was then, the basic message of the organization is that sports carry a risk of dental injury, and dentists must know how to treat these injuries and that prevention of injuries, especially with the use of athletic mouthguards is effective and practical. Since its inception, the ASD's mission has been to spread this message to a variety of different groups as well as other dentists. These include athletes themselves, sports medicine physicians, athletic trainers, parents, coaches and sports administrators. We have partnered with other groups to try to bring our message to the public as well, including working in conjunction with three other dental groups on National Facial Protection Month which occurs every April. In addition, ASD has liaison relationships with The National Federation of State High School Associations, the NCAA, and the National Athletic Trainers Association which help us to alert the sports world about our message of prevention. In this presentation, we will discuss why sports dentistry is important to the world of sports medicine and to athletes specifically. We will cover what the facts are as to how effective we can be in the prevention of athletic injuries, and present how our messages can be targeted to different age groups, different populations, and the participants in all sports. Drs. Lambert and Mills have nearly sixty years of being involved in sports dentistry at all age and skill levels. Dr. Mills is a pediatric dentist and has educated and treated young athletes through collegiate players. Dr. Lambert has been involved with athletes of all ages and has worked with athletes at the professional level of various sports. He is currently the team dentist for the Minnesota Lynx of the Women's National Basketball Association (WNBA). Both are volunteer dentists for the United States Olympic Program.

**Learning Objectives:**

1. The history of the Academy for Sports Dentistry and what its primary message is.
2. To what extent dental injuries occur in sports and how effective prevention of sports injuries with mouthguards can be.
3. Which different athletic populations exist, and which messages resonate with each one.
4. Using different past campaigns such as National Facial Protection Month, we will show what should be included in an effective sports dentistry campaign.
5. Using standard messaging techniques such as the World Health Organization's, we will describe how a sports dentistry campaign can be most effective for different groups.
6. Using our combined experiences, we will suggest how someone should approach different groups to educate them to the message of prevention of athletic injuries.

## Strategies to Prevent Secondary Injuries

**Asgeir Sigurdsson, DDS, M.S**

**Abstract:** It has been shown that children that have sustained one dental injury have 4.85 times greater odd ratio for additional injury compared matched children that have not been injured. There is no reason to believe that older teenagers are not at similar risk, as well as professional athletes. Strategic prevention is therefore of outmost importance. This lecture will review the evidence base for prevention of dental injuries, with emphasis on what seems to work and what not for these groups. It is though clear that many preventive measures, like mouthguards and/or faceguards, will not be of much use for many of these individuals because the injuries are more likely to occur in "backyard" play rather than in organized athletic events. Therefore, the role of education, for both lay persons as well as professionals, in prevention and emergency responses to dental injuries will be explored and some strategies suggested.

**Learning Objectives:**

1. To know about who are at most risk for primary as well as second dental injury.
2. To know which preventive measures for dental injury have clinical/scientific backing.
3. To know about best way to educate lay persons and professionals about prevention and
4. emergency responses to dental injuries



## Developing a Core Outcome Set for Dental Traumatology

**Peter Day**

**Abstract:** A Core Outcome Set [COS] is an agreed and standardized collection of outcomes that should be measured and reported [as a minimum] in all relevant clinical studies and trials evaluating different treatment interventions following traumatic dental injuries. The use of core outcome sets should reduce heterogeneity between studies and allow the results of studies to be compared, contrasted and combined as appropriate. This presentation will discuss the recent development of a Core Outcome Set for dental traumatology. It will discuss why a Core Outcome Set was developed, how it was developed, who was involved and what outcomes were included for each injury. More importantly it will describe what impact the Core Outcome Set will have on you as a clinician treating patients with traumatic dental injuries, as a clinical leader reviewing the clinical care you provide and as a researcher wanting to publish your clinical audit or research outcomes. Now that the Core Outcome Set has been agreed and published, the presentation will explore what next, including new work on developing a smaller number of key outcomes for busy clinicians and discussing how best to implement this work to maximize its adoption.

### **Learning Objectives:**

1. To discuss the development of an internationally agreed Core Outcome Set for dental traumatology.
2. To describe how this work is important to clinicians, clinical leaders and researchers in the field of dental traumatology.
3. To explore what next for the Core Outcome Set including how best to ensure the outcomes are adopted as widely as possible.

## Towards Performance Requirements for Athletic Mouth Protectors

**Chris Dennison**

**Abstract:** The Mouth protectors, sometimes referred to as mouthguards, are used in many impact sports where there is risk of orofacial injury. Research assessing their efficacy as injury protection devices is commonly epidemiological and attempts to show whether or not their use results in net positive or negative effects on injury rate and severity. While statistical approaches can indicate trends in rate and severity, they cannot indicate the design attributes (e.g. material choice, extent of coverage of oral anatomy) that result in effective protection. This presents challenges when designing rigorous, biomechanically valid, engineering approaches for assessing the protective performance of mouth protectors. Such approaches are necessary to advance the goal of continual improvement in protective gear. Focusing on injury biomechanics, the talk will begin by discussing typical paradigms used to assess head protection equipment with emphasis on the challenges associated with defining and justifying performance metrics. The talk will cover biomechanical research and open questions related to orofacial protection in impact sports and conclude with discourse on translating biomechanical research towards standardized test methods that quantify performance of mouth protectors.

### **Learning Objectives:**

1. Inform on current discourse related to dental protection in the biomechanics community.
2. Inform on current efforts towards developing performance standards.

## Strategies to Reduce the Consequences of Impact Trauma to the Teeth

**Professor. Paul V. Abbott, AO, BDS, MDS, FRACDS(Endo), FPFA, FADI, FICD, FACD, FIADT**

**Abstract:** Trauma can have serious consequences on the prognosis of teeth. The pulp, periradicular and soft tissues can respond to impact trauma in various favourable and unfavourable ways. The unfavourable responses are dependent on the stage of root development, concurrent injuries to the same tooth, the degree of displacement of the tooth and the immediate management of the injury. The most serious consequences are external replacement and inflammatory resorption. Understanding the tissue responses and the factors affecting them is essential for appropriate management. A thorough history and examination will reveal the relevant factors for each case and will allow dentists to make informed decisions about the emergency management required to reduce any consequences of the injury. Some injuries require immediate and comprehensive treatment whilst others require simpler management and/or just observation of the healing responses. This lecture will outline the immediate management of dental injuries to reduce the long-term consequences of the trauma with a particular emphasis on prevention of external inflammatory resorption.

### **Learning Objectives:**

1. Describe the favourable and unfavourable responses of the pulp, peri-radicular and soft tissues to impact trauma.
2. Understand the factors that affect the various responses of the tissues to impact trauma.
3. List the injuries that are at "high risk" of developing unfavourable responses following impact trauma to the teeth.
4. Describe the immediate management strategies to reduce the consequences of the impact trauma, and especially external inflammatory resorption.

## Gen Y Dental Trauma Education for Dental Students: Real-Time, Interactive and Leading Edge

**Yuli Berlin-Broner, DMD**

**Abstract:** Millennials (also known as Generation Y) are a generational demographic cohort. The Millennial generation is generally characterized by an increased use and familiarity with communications, media, and digital technology. Adopting classroom teaching and curricula to the specific interests and skills of this generation poses a challenge in dental schools' settings. Dental traumatology is a complex topic and requires multi-disciplinary understanding and comprehensive knowledge. Using various innovative and dynamic techniques for classroom teaching might improve the participation and cooperation of the new generation of learners and thus improve the overall educational outcomes of dental traumatology education. Apart from learning about the fascinating differences between generations, the audience will become familiarized with the unique characteristics of Generation Y dental students. A discussion will address specific challenges that educators face in the classroom when teaching dental trauma. During the session, incorporation of technological aids will be demonstrated, and finally, the audience will learn some useful 'take-home' methods to enhance dental trauma education.

### **Learning Objectives:**

1. Define generation Y and the characteristics of dental students in Gen Y.
2. Discuss the challenges educators face within dental trauma education.
3. Demonstrate the use of technological aids in the classroom to enhance dental trauma education.
4. Learn applicable methods to enhance dental trauma education to Gen Y dental students.



## Long-Term Consequences of Dental Trauma

Clinical Professor Geoffrey Heithersay, AO

**Abstract:** The opportunities to learn from long-term survivors of dental trauma are relatively rare but are particularly relevant today where so often what may appear to be a compromised tooth is removed and replaced by an implant. By observing the life cycles of some interesting and challenging examples of dental trauma, the dynamics of competing biological and pathological processes will be examined, and therapies aimed at achieving long-term tooth survival outlined.

**Learning Objectives:**

1. To understand the concept of life cycles of traumatised teeth and how this may be applied in trauma management.
2. To recognise the importance of the careful monitoring of pulp and periodontal responses to dental trauma especially if subjected to subtle secondary trauma.
3. Be cognizant of various types of trauma induced tooth resorption, recognize their clinical manifestations and management alternatives.
4. Be aware of the potential for late but treatable complications of dental trauma.
5. Recognize the short and long term psychological impact of dental trauma.

## The Future of Dental Traumatology

Jens Ove Andreasen, DDS, Odont. Dr. HC.

**Abstract:**

**Learning Objectives:**



## Oral Research Reports

### The Outcomes of Auto-Transplanted Teeth At Leeds Dental Institute

**Albalooshy, Amal \***, Duggal, Monty and Day, Peter  
University of Leeds, Paediatric Dentistry Leeds, West  
Yorshire, United Kingdom

**Keywords:** auto-transplantation, pulp survival, periodontal healing

**Purpose/Aim:** To evaluate the outcomes of tooth auto-transplantation (TA) in children and adolescents at the Leeds Dental Institute.

**Materials and Methods:** 135 dental records (164 transplanted teeth) with appropriate radiographs and a minimal of one year follow up period were reviewed retrospectively. The outcomes of success and survival rates were assessed based on pulp survival and periodontal healing. Kappa score was  $\kappa=0.90$  for inter-examiner agreement and  $\kappa=1$  for intra-examiner agreement.

**Results:** The mean age at transplantation was 13.8 years. The median observation period was 3 years with a range of 1-15 years. Indications for TA were: ankylosis following trauma 39%, failing anterior teeth owing to recurrent infection 36%, extensive caries 0.6%, and missing permanent teeth due to either avulsion without replantation 10.4% or hypodontia 6.7%. Other reasons included developmental defects 5.5% and impaction 1.8%. Eighty five (51.8%) transplants had complete root development and apical closure whereas 79 (48.2%) transplants were immature with open apices. 64.6% of immature transplants showed radiographic and clinical signs of pulp revascularisation. Unfavourable periodontal healing was seen in 22.2% transplants as a result of repair related root resorption 13%, infection related resorption 4.9% and both resorption types 4.3%. The overall transplant success rate was 75.3% and the survival rate was 90.2%.

**Conclusions:** TA showed a good success and survival rates in Leeds, and should be considered a viable biological option for tooth replacement in growing patients.

### Change in Quality of Life After Treatment of Dental Trauma

**Aljundi, Suhad \***

Jordan University of Science and Technology  
Preventive Dentistry, Irbid, , Jordan

**Keywords:** OHRQoL, dental, trauma

**Purpose/Aim:** To assess the change of oral health related quality of life (OHRQoL) among 12-14 year-old children after treatment of traumatic dental injuries (TDI) to anterior teeth

**Materials and Methods:** One hundred and twenty children age 12-14 years attending pediatric dentistry clinics for treatment of TDI were recruited. Data on OHRQoL was collected through direct interview with children to fill a previously validated Arabic version of (CPQ11-14) questionnaire, the questionnaire was filled twice; before treatment and 1 month after treatment. Other variables related to the demographic characteristics of the participants, the traumatic injury, other oral conditions (dental caries and malocclusion) were determined and used as controlling variables. The change in the responses to the questionnaire were analyzed using McNemar's test, overall and domain score changes were also assessed using dependent t-test, significance level was set at 5%.

**Results:** Ninety eight children (57% males and 43% females) with a mean age of 13.2 years completed the pre- and post-treatment questionnaires. The overall (CPQ 11-14) score improved significantly ( $P<0.01$ ) after treatment, the biggest change was demonstrated in the proportion of negative responses related to the emotional and social well-being domains after adjustment for confounding factors. More improvement in OHRQoL was observed in children with aesthetic treatment needs. The largest effect size was observed for items; been embarrassed or ashamed because of teeth, avoided smiling because of teeth, and been teased, bullied or called names by others

**Conclusions:** Treatment of TDI resulted in improvement of OHRQoL, especially in children with aesthetic treatment needs at baseline





## Resorptions Control: Protocol to Enhance Calcium Hydroxide Pastes Intradental Penetrability

**Andrade, Flaviana \***, Vasconcelos Lrms; Pereira Tc; Vivian Rr; Bramante Cm; Duarte Mah  
Bauru School of Dentistry - University of São Paulo  
Endodontics, Bauru, São Paulo, Brazil

**Keywords:** Calcium hydroxide, Ultrasound, Enterococcus faecalis

**Purpose/Aim:** The inflammatory resorption of traumatized teeth can be controlled by utilization of calcium hydroxide (CH) pastes inside root canals, killing the intradental microorganisms that stimulate a faster resorption. This study evaluated the influence of the ultrasonic agitation (UA) of CH pastes for antimicrobial action and penetrability on infected dentin using Confocal Laser Scanning Microscopy (CLSM), analyzing the time necessary for this effect.

**Materials and Methods:** Cylindrical dentin specimens were infected with *Enterococcus faecalis* in BHI broth using a new contamination protocol of 5 days. They were divided into 8 groups and dressed with the CH pastes over 7 or 15 days, with the vehicle propylene glycol or distilled water and with ultrasonic agitation of the paste or without agitation (UA for one minute). After the medication's removal, the viable (green) and dead (red) bacteria in the infected dentinal tubules, with Live and Dead dye, were observed by means of CLSM. For the penetration test, the dye Rodamine B was added to CH pastes in other specimens and analyzed by CLSM.

**Results:** All pastes demonstrated better penetration and antimicrobial activity with both vehicles when agitated with ultrasound, even in periods of seven days. The vehicle propylene glycol showed better results than distilled water.

**Conclusions:** Therefore, ultrasonic agitation of CH pastes favored a greater penetrability of the calcium hydroxide into the dentinal tubules in less time, reducing the clinical time of intracanal medication to decontaminate infected dentine, mainly in cases of inflammatory resorption.

## Expression Of MMPS In Replanted Teeth Bearing External Root Resorption

**Bastos, Juliana \***, Colosimo, Enrico; Goulart, Eugenio; Cortes, Maria Ilma; Barbato Ferreira, Daniela; Silva, Tarcilia  
Federal University of Minas Gerais, Restorative Dentistry, Belo Horizonte, Mg, Brazil

**Keywords:** external root resorption, replantation, MMPs

**Purpose/Aim:** Progressive forms of inflammatory and replacement external root resorption (IERR and RERR) are frequent sequelae and the main cause of tooth loss following replantation. The cellular mechanisms involved in external root resorption (ERR) shows similarities with bone resorption but its specific regulatory mechanisms are incompletely understood. Matrix metalloproteinases (MMPs) are an important family of enzymes responsible for degradation of extracellular matrix (ECM) components during destruction of oral tissues and have been implicated in apical periodontitis, primary root resorption and during orthodontic tooth movement. However, there is no information regarding the involvement of MMPs during ERR. The aim of the present study was to investigate the expression pattern of MMP-2 and MMP-9 in human teeth presenting ERR after replantation.

**Materials and Methods:** Root fragments from 22 teeth showing IERR and 20 teeth with RERR were processed to measure MMP-2 and MMP-9 by using double-ligand enzyme-linked immunosorbent assay (ELISA). The control group consisted of 12 mature premolars with required extraction for orthodontic reasons. MMPs expression patterns were evaluated comparing mean log-transformed concentrations between case (IERR and RERR) and control groups corrected by patient's age and ERR index at the moment of extraction.

**Results:** MMP2 levels were significantly higher in the RERR group when compared to control ( $p=0.02$ ) and IERR ( $p=0.007$ ) groups, even after correction by age and index of ERR.

**Conclusions:** The present results evidenced distinct expression patterns of MMP2 when compared teeth bearing IERR and RERR bringing new and relevant contribution to the understanding of the immunopathological profile of such entities.

## Prognosis And Complications Of Laterally Luxated Teeth: A Systematic Review

**Clark, Danielle \***, Gill, Shireen; Levin, Liran  
University of Alberta, Department of Dentistry, Edmonton, Alberta, Canada

**Purpose/Aim:** Lateral luxation injuries are a traumatic dental injury in which the tooth becomes displaced in the palatal/lingual or labial direction. These injuries make up 29.5-57% of all traumatic dental injuries. Two systematic review studies focused on prognosis and complications of lateral luxation injuries to immature and mature teeth were conducted.

**Materials and Methods:** For both studies, a systematic search was performed in Medline, Pubmed, Scopus, Lilacs, EMBASE and Cochrane databases in October 2017. Both searches included prospective and retrospective observational studies.

**Results:** For immature teeth, pulp canal obliteration was the most frequent complication of lateral luxation injuries (31.3%) followed by pulp necrosis (17.5%), inflammatory resorption (5.7%) and surface resorption (3.2%). For mature teeth, pulp necrosis was the most frequently reported complication (44.2%) followed by surface resorption (14.0%) pulp canal obliteration (8.1%) and replacement resorption (0.9%). Meta-analysis was not conducted for either systematic reviews due to heterogeneity nature of the included studies.

**Conclusions:** Many immature teeth that experience lateral luxation are prone to pulp canal obliteration while mature teeth are more likely to experience pulp necrosis. Overall, both studies emphasize the need for consistent reporting of dental trauma outcomes.

## Clinician Confidence In The Diagnosis And Management Of Dentoalveolar Trauma

**Clough, Francis \***, Champaneri, Sumeet; Patel, Mital  
Barts Health Nhs Trust, Dental Hospital, London, , United Kingdom

**Purpose/Aim:** To ascertain the relative confidence of a broad range of clinicians in diagnosing and managing dento-alveolar trauma and to assess whether there is a correlation between their academic or training background and the responses that they give to try and guide recommendations for further training.

**Materials and Methods:** A total of 120 practising dentists, with a variety of backgrounds, both in primary and secondary care, were invited to complete an online questionnaire that aimed to discern their relative confidence in diagnosing and managing trauma affecting the teeth and supporting structures.

**Results:** Universal confidence in the diagnosis of trauma to the dentoalveolar complex irrelevant of the severity was seen, however, confidence in management increases with age and clinical experience regardless of clinical setting. With greater exposure in secondary care, irrespective of speciality, there is a positive increase in confidence in managing complex periodontal injury. 100% of respondents with training in OMFS are confident in managing soft tissue lacerations independently, whereas those with no OMFS experience would look for guidance. Our survey indicated that greater than 60% of clinicians would benefit from further dental trauma education and 97.1% of respondents would consult the online 'Dental Trauma Guide'.

**Conclusions:** As age, experience and regular exposure to trauma increases, clinicians are better equipped to manage the varying presentations. The secondary/tertiary care setting is a suitable environment for gaining experience and confidence in both diagnosis and management of dento-alveolar trauma. The method of survey implementation was designed to capture detailed information, whilst also ensuring the survey could be completed in a timely manner to prevent a fall in clinicians response rate. Despite the general high confidence level in diagnosing and managing dento-alveolar trauma, clinicians stated regular training and education would reinforce clinical skills to allow improved outcomes for the patient.



## Endodontic Treatment After Autotransplantation Of Premolars: A Retrospective Study

**De Cleen, Michiel \***, Baart, Jacques  
Practice Limited to Endodontics, Amsterdam  
Amsterdam, Netherlands

**Keywords:** autotransplantation, endodontics, apexification

**Purpose/Aim:** Successful autotransplantation of immature teeth results in periodontal healing, obliteration of the pulp space and continued root growth. If pulpal healing does not occur, apical periodontitis may develop. In these cases endodontic treatment (e.g. apexification) is indicated.

**Materials and Methods:** In this retrospective study, the results of endodontic treatment of 25 autotransplanted premolars were evaluated. All transplantations were performed by the second author (JB). All endodontic treatments were carried out by the first author (MDC) between 2009 and 2017. Periapical radiographs taken at the start and completion of endodontic treatment and 1-5 years post-operatively were used to evaluate the treatment results. The outcomes of endodontic treatment were classified as complete healing (healed), incomplete healing or non-healing.

**Results:** Seven teeth were not available for evaluation; 18 teeth were evaluated 1-5 years after endodontic treatment. Complete healing after endodontic treatment was observed in 88% of the teeth one year after treatment and in 94% of the teeth two years after treatment. In some cases, continued root growth was observed after completion of the endodontic treatment.

**Conclusions:** In cases of apical periodontitis after autotransplantation of immature premolars, endodontic treatment is very successful.

## Avulsion of Primary Incisors: A Retrospective Study

**Del Negro, Bianca \***, Menzes, An; Kimura, Js; Wanderley, Mt  
School of Dentistry, University of São Paulo- Usp  
Department of Orthodontics and Pediatric Dentistry,  
São Paulo, São Paulo, Brazil

**Keywords:** avulsion, primary teeth, traumatic dental injury

**Purpose/Aim:** The purpose of this study was to explore the management of avulsed primary upper incisors and to investigate the treatments and repercussions in permanent dentition that this injury can cause.

**Materials and Methods:** 2794 photographic and radiographic files of patients, who attended the Research and Clinical Centre of Dental Trauma in Primary Teeth, University of Sao Paulo, from 1998-2017, were evaluated. Clinical information related to sex, age, cause of trauma, tooth affected, treatment choice and sequelae were collected.

**Results:** From the files evaluated, 440 children suffered avulsion. 211 (7.5%) presented avulsion of primary upper incisors and were followed up until complete eruption of their successor, resulting in a total of 288 avulsed primary teeth. The male sex was the most affected (62.6%), 58.8% of the patients were up to 4 years of age and fall was the most frequent cause of this injury (64.2%). The most affected teeth were central incisors (81.9%) and 139 (48.7%) functional space maintainers were performed. Seven teeth replantation were performed and 2 were successful. From 117 (40.6%) permanent upper incisors affected, 69.2% presented enamel discoloration or enamel hypoplasia and 9.4% presented severe complications, such as crown dilaceration, root dilaceration, arrest of root formation and odontoma-like malformation. Therefore, 36.7% of the permanent teeth required treatment to preserve them in the oral cavity and 8.5% required tooth extraction.

**Conclusions:** Avulsion of primary upper incisors occur mainly in children at younger age, leading to sequelae to permanent dentition with treatment needs. Thus, special attention should be given to children who suffered avulsion.

## Outcomes Of Decoronated Teeth in Children at Birmingham Dental Hospital

**Gohil, Tanika \***, Casaus Abdullah; May, Joanna; James, Alison  
Birmingham Dental Hospital and School of Dentistry  
Paediatric Department, Birmingham, , United Kingdom

**Keywords:** decoronation; avulsion; crown- root fracture; management

**Purpose/Aim:** The aim of this study is to assess the outcome of teeth which underwent a decoronation procedure, in the paediatric department at Birmingham dental hospital, United Kingdom.

**Materials and Methods:** Clinical records were retrospectively reviewed to identify patients who underwent decoronation between 2013- 2018. The records were examined for the following: age at injury, tooth injured, nature of the injury, reason for decoronation, surgical technique, outcome and follow up of those identified.

**Results:** Eight patients (mean age 10 years, range 7-12 years) with a total of 10 upper anterior teeth were identified. Five teeth had cervical crown- root fractures which were non- vital. Three teeth were intruded and 2 avulsed, resulting in infra- occlusion due to replacement resorption.

In all cases, a mucoperiosteal flap was raised, crown removed, and primary closure achieved. One crown- root fractured tooth and one avulsed tooth were obturated with mineral trioxide aggregate (MTA). All other teeth were endodontically accessed and bleeding elicited.

Patients were followed up for a range of 3- 36 months. 88% (n= 7) of patients had radiographic review ranging from 3- 15 months post- operatively.

At the final review:

-Of the 5 teeth with crown-root fractures only the one obturated with MTA was successful and infection free

-All replacement resorbed teeth (n=5) were clinically sound and infection free

**Conclusions:** Decoronation appears to be a valuable treatment option for the traumatised tooth undergoing replacement resorption. This study highlights greater consideration is required when managing the pulp prior to decoronation of crown- root fractured teeth.

## Traumatic Dental Injuries: United Arab Emirates Emergency Departments' Physicians Knowledge

**Halabi, Manal \***, Hussein, Iyad. Kowash, Mawlood. Al Mahmoud, Amal  
Mohammed Bin Rashid University of Medicine and Health Sciences, Hamdan Bin Mohammed College of Dental Medicine, Pediatric Dentistry, Dubai, Dubai, United Arab Emirates

**Keywords:** Emergency room, Physicians, Trauma

**Purpose/Aim:** Emergency department physicians (ER-Drs) require a minimum amount of knowledge to appropriately diagnose, manage or refer a traumatic dental injury (TDI). Studies worldwide suggest ER-Drs' knowledge levels are inadequate.

**Aim:** To study ER-Drs' knowledge about the management of TDIs in the United Arab Emirates (UAE)

**Materials and Methods:** A cross-sectional questionnaire survey of 155 ER-Drs was conducted and a score of TDI knowledge was created (out of 6). Statistical significance was set as  $P < 0.05$ .

**Results:** A third of ER-Drs encountered TDIs more than once a week and 29% more than once a month. The proportion of ER-Drs who received education about diagnosis and treatment of TDIs was 60%, of which a significantly high proportion (84.4%), were Western trained ( $p=0.007$ ). Consultant & specialist ER-Drs had the highest score of overall knowledge in TDIs;  $4.22(\pm 1.5)$  followed by residents [ $3.95(\pm 1.19)$ ], and then general practitioners (GPs) [ $3.18(\pm 1.54)$ ] ( $p=0.001$ ). Those with 5-10 years of experience scored a statistically significant lower score of knowledge [ $3.07(\pm 1.65)$ ] than those with <5 years of experience [ $3.86(\pm 1.36)$ ] and > 10 years of experience groups [ $3.83(\pm 1.36)$ ] ( $p=0.034$ ). GPs were the least confident in placing sutures intra-orally with 38.2% reporting being confident while 80.6% of the consultant & specialist ER-Drs and (57.1%) of the resident group reported confidence. An estimate of 6,377 TDI cases were encountered in ER departments across the UAE per year.

**Conclusions:** Overall knowledge of TDIs and their management among ER doctors across the UAE is inadequate. GPs had the least knowledge and confidence to manage TDIs.



## Parents' Knowledge And Attitude in Medan, Indonesia Towards Avulsed Emergency Treatment

**Harahap, Ami Angela \***, Gio, Prana Ugiana\*\*

\* Faculty of Dentistry, University of Sumatera Utara \*\* Faculty of Mathematics and Natural Science, University of Sumatera Utara\* Paediatric Dentistry Department \*\* Mathematics Department, Medan, Sumatera Utara, Indonesia

**Keywords:** Knowledge and Attitude, parents, avulsed emergency treatment

**Purpose/Aim:** Avulsion is one of the most destructive dental trauma. The emergency dental care is crucial for the prognosis. The prognosis significantly depends on prompt and efficient action at the site of accident. Parents are the closest person to the child and play an important role in emergency treatment. The knowledge and attitude of avulsed emergency treatment by parents are the most important factors to determine the outcome. The aim of this cross-sectional questionnaire study is to examine the association between knowledge and attitudes of parents regarding the emergency dental treatment of avulsed permanent teeth of children.

**Materials and Methods:** A cross-sectional questionnaire study was conducted on 1136 parents with children between 7-9 years old in 8 districts of Medan representing different types of demographic data age, gender, level of education, demographic area (rural and urban) with a questionnaire. The data has been analysed statistically using Chi-square test ( $\alpha = 5\%$ ).

**Results:** Parents' education levels had a significant association to knowledge of avulsion ( $p < 0.05$ ). The association of demographic area ( $p < 0.05$ ) and level education of parents ( $p < 0.05$ ) were significantly associated to attitude of parents. The significant association between knowledge and attitude of parents was also observed ( $p < 0.05$ ).

**Conclusions:** The level of knowledge of parents regarding avulsed emergency treatments is low and as a result it reflects in their attitude of managing emergency avulsed dental care. Dentists and public health professionals are expected to provide more attention about counselling and educating parents regarding the prevention and procedures for avulsed emergency treatment.

## Achieving Consensus for the Core Outcome Set For TDI

**Kenny, Kate \***, Skapetis, Tony\*\*; Day, Peter\*

\*School of Dentistry, University of Leeds \*\*Faculty of Dentistry, University of Sydney, \*Department of Paediatric Dentistry \*\*Oral Health, Western Sydney Lhd, Leeds, United Kingdom

**Keywords:** outcomes, consensus, Delphi

**Purpose/Aim:** A Core Outcome Set (COS) for Traumatic Dental Injuries (TDI) has been published. A key process in the development of the COS was achieving consensus on outcomes to be included. A robust, evidence-based methodology was adapted for this international project.

**Materials and Methods:** A list of all potential outcomes for a traumatic dental injury was developed following a systematic review and a survey of almost 1500 dentists worldwide. An Expert Working Group (EWG) comprising 12 specialists from around the world was convened. The Delphi technique was chosen as the most appropriate methodology to achieve consensus on which outcomes should be included. Two rounds of scoring were undertaken. The scores were collated and consensus determined according to the GRADE criteria. Conference calls were convened to discuss the outcomes where consensus hadn't been achieved. The EWG were then split into smaller subgroups determined by subspecialty. Advice from subject specific experts, outwith the EWG, was sought when required. How and when to measure the core outcomes was thus determined.

**Results:** Consensus was achieved for which outcomes should be defined as 'core', how and when they should be measured. A Core Outcome Set for TDI has been published.

**Conclusions:** The Delphi Technique proved a useful tool for determining consensus amongst a geographically diverse group of experts in the field. Working in subgroups facilitated the finalisation of the Core Outcome Set. These evidence-based methodologies can be used for development of robust clinical guideline and best practice documents.

## Optimal Apical Extent Of Mineral Tri-oxide Aggregate (MTA) Barrier

**Logani, Ajay \***, Tabiyar Krunal

Centre for Dental Education and Research, All India Institute of Medical Sciences, Conservative Dentistry and Endodontics, New Delhi, Delhi, India

**Keywords:** Open apex, MTA, apical plug

**Purpose/Aim:** Background: MTA barrier is the only evidence based treatment protocol for management of non vital immature teeth with open apex. Till date, all case series/reports have advocated MTA barrier placement up to the radiographic apex. This may be considered as an overfill Aim: To evaluate the optimal apical extent of MTA barrier for the management of permanent immature non vital anterior teeth.

**Materials and Methods:** Ten patients of either gender between the age group of 8-18 years with traumatized permanent non vital maxillary anterior teeth (n=16) exhibiting non blunderbuss canal associated with immature apex were included. Standard aseptic endodontic treatment procedures were followed. Based on the apical extent of MTA plug, subjects were distributed by block randomization method into two predetermined study groups. i.e. Group I (n=8), MTA barrier up to the radiographic root end and Group II (n=8), MTA barrier 2mm short of the radiographic root end. At 24 months, the teeth were evaluated radiographically for change in periapical index score by two independent evaluators. Results were analyzed using Fischer's exact test.

**Results:** In group I, 75% (n=6) and in group II 87.5% (n=7) of the teeth were deemed as healed. However the results were not statistically significant (p=0.99).

**Conclusions:** The periapical healing was favorable when MTA barrier was placed 2mm short of the radiographic root end. Thus, this can be considered as the optimal apical extent of MTA plug for the management of permanent immature non vital anterior teeth.

## HPDLSC Viability And Differentiation Potential In Avulsed Tooth Storage Media

**Tewari, Nitesh \***, Mohanty Sujata, Mathur Vijay Prakash

All India Institute of Medical Sciences, New Delhi Stem Cell Facility Pedodontics and Preventive Dentistry, Cder, New Delhi, Delhi, India

**Keywords:** Avulsion, Storage Media, Stem Cells

**Purpose/Aim:** Immediate replantation has been recommended as the best method of management of tooth avulsion by IADT. In event of a delay, tooth needs to be preserved in appropriate storage medium. Studies have evaluated Fibroblast viability in large number of storage media. However these cells rarely function in seclusion. It has been hypothesized that human Periodontal Ligament Stem Cells (hPDLSC) have major role in success of replantation. Present study was planned to assess the effect of various storage media on viability, proliferative ability and differentiation potential of hPDLSCs.

**Materials and Methods:** hPDLSCs were isolated and characterized from mature permanent teeth extracted atraumatically from healthy human subjects of 14-24 years for orthodontic purposes. Media tested were: a. Hanks Balanced Salt Solution b. Aloe Vera c. Egg White d. HBSS + Egg White and f. Oral Rehydration Solution. Images were documented; cell viability was assessed using MTT assay and their differentiation potential was evaluated.

**Results:** HBSS + egg white (87.2±8.6) had highest percent cell viability and differentiation potential followed by ORS-L and egg white at 150 min. HBSS + egg white had highest percent cell viability (30.3±2.9) at 96 hrs followed by ORS-L, egg white, HBSS and aloe vera (1.3±0.6).

**Conclusions:** The combination of Egg White + HBSS was found to be the most effective storage media for hPDLSCs followed by ORS, HBSS, Egg White and Aloe Vera (10%).



## Oral Case Reports

### Bioactive Therapeutic-Materials For Immature Teeth: Scientific Background And Clinical Relevance

**Alapati, Satish \***, Kratunova Evelina, Sahar Alrayyes  
University of Illinois at Chicago College of Dentistry  
Department of Endodontics Department of Pediatric  
Dentistry, Chicago, IL, United States

**Keywords:** Pulp-Regeneration, Bioactive-Materials, Biomineralization

**Case Presentation:** Advanced biocompatible materials can yield improved outcomes for pulp therapy of immature permanent teeth. These materials are shown to revitalize and preserve remaining pulpal and apical tissues to achieve root maturation. Formation of mineralized tissue barriers at the pulp-dentin interface facilitates regeneration and prevents leakage of tissue fluid and bacterial byproducts. A review of young permanent tooth pulp therapy with selected contemporary bioactive materials, protocols and long-term follow-up with literature support are presented. Additionally, in vitro investigation of bioactive materials, such as ProRoot MTA and EndoSequence Root Repair Material (ERRM) Putty, evaluating their setting reaction with time and changes in interfacial mechanical properties are discussed. Four phases are found:  $\text{Ca}_3\text{SiO}_5$ ,  $\text{Ca}_3\text{Al}_2\text{O}_6$ ,  $\text{Ca}_2\text{SiO}_4$ , and  $\text{CaSO}_4$ . ERRM contained  $\text{ZrO}_2$ , and ProRoot MTA contained  $\text{Bi}_2\text{O}_3$ . The elastic modulus is higher for adjacent dentin thickness up to approximately 35  $\mu\text{m}$  with both materials. Interfacial mechanical properties vary with maturation of these bioceramics, which can be related to superior sealing and biocompatibility. While maturation might appear complete at 12 hours, both bioceramics undergo further setting up to 3-months, enabling remineralization at the interface. Clinical cases with indications and material handling properties are presented. Long-term follow-up, including clinical and radiographic findings with evident resolution of soft tissue lesions, is included. Radiographic evaluations of root end-thickening and resolution of periapical pathology are also discussed. In summary, clinical cases with indications and material handling properties are presented, and some insights into setting reactions for two popular bioceramics and their effect on the dentin interface will also be discussed.

### Management Of Dental Injuries In Special Health Care Needs Children

**Al-Batayneh, Ola \***

Jordan University of Science and Technology  
Preventive Dentistry, Irbid, Choose a State or Province,  
Jordan

**Keywords:** special health care needs, children, clinical management of dental trauma

**Case Presentation:** The term special health care needs (SHCN) refers to “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs”.

Due to the underlying physical and medical conditions, individuals with SHCN are at increased risk for traumatic dental injuries (TDI) as well as oral diseases which can have a direct and devastating impact on health and quality of life. The conventional treatment plans for TDI need to be modified and customized to each individual presenting situation in addition to a thorough knowledge of recommendations and management strategies in order to make a correct treatment plan.

Several difficulties present when managing such patients after TDI, mainly behavioral which dictate a need for special techniques which the pediatric dentist is well-trained on. Since patients with disabilities do not have the ability to cooperate with preventive oral health practices, proper treatment is jeopardized. There are other barriers to treatment including financial issues, poor dental awareness by parents, and unwillingness by dentists to accommodate such patients in their clinics. The aim of this presentation is to showcase treatment of different TDI in children with SHCN and outline the management of each case focusing on restoration of function and esthetics, using different behavioral management approaches. Treatment of SHCN children with conditions including sensory impairment associated with epilepsy, intellectual disability, cerebral palsy, and autistic spectrum disorder with TDI including crown fractures, avulsion, lip biting and degloving injury will be presented.

## Regenerative Endodontics Following Traumatic Injuries: Importance Of Case Selection

**Alon, Elinor \***

Tufts School of Dental Medicine  
Endodontics, Boston, United States

**Case Presentation:** Regenerative Endodontics Following traumatic injuries – The importance of case selection: The case presentation will present two back to back cases of Regenerative Endodontics following replantation of two Avulsed teeth. A follow up of 42-51 months will be presented showing one case of success and one case of failure. Factors affecting the long term success of Regenerative Endodontics will be reviewed as well as our current expectations of outcomes. The differences between both cases will be emphasized in terms of dry time, clinical signs and symptoms, pulp and peri-apical diagnosis, types of root resorption and intra-operative medicament placed. The cells and growth factors that are the key factors in the success or failure of Regenerative Endodontics will be discussed leading to advancements in the field. Concluding remarks will emphasize the importance of case selection in the field of Regenerative Endodontics versus other treatment options that are available for immature permanent teeth.

## Treatment of Central Incisors with Class III Invasive Cervical Resorption

**Caicedo, Ricardo \***

University of Louisville, School of Dentistry  
Department of Oral Health and Rehabilitation Endodontics Division, Louisville, Ky, United States

**Keywords:** Class III Invasive Cervical Resorption, Sequela of Dental Trauma, Preserve tooth life

**Case Presentation:** External cervical resorption post-dental trauma has also been described as invasive cervical resorption (ICR) because of its aggressive nature and describes the loss of dental hard tissue beginning at the cervical region of the root surface as a result of an odontoclastic action. Dental Trauma followed by Orthodontic treatment seems to be the most common risk factors. The treatment of ICR often involves the surgical exposure of the invaded root surface to remove the inflammatory tissue. Restorative materials such as amalgam, glass ionomer, resin-modified glass ionomer cement, and mineral trioxide aggregate have been proposed to fill the resorptive defect. When only minimally sound tooth structure is present, dentists face the dilemma of preserving the affected tooth with multiple treatment procedures, including non-surgical endodontic treatment, post placement, crown lengthening, and complete crown restoration or extracting the tooth and placing a dental implant. A uniform 1.5- to 2-mm vertical axial wall height ferrule improves the long-term survival of a non-surgical endodontically treated tooth. These clinical reports describe the interdisciplinary alternative approach to restoring a tooth with ICR and non-surgical root canal treatment, direct reparative repair, periodontal surgery, and periapical endodontic microsurgery to prevent further complications and preserve tooth life. The teeth were followed-up for 30 months after treatment with no complications.





## Traumatic Bone Cyst Of Mandible; An Unconventional Approach And Case Report

**Genena, Salma \***, Elbackly Rania, Zaazou Ashraf and Abdallah Amr  
Faculty of Dentistry, Alexandria University, Egypt  
Conservative Dentistry, Endodontics Division  
Alexandria, Egypt

**Keywords:** traumatic bone cyst, mandible, platelet-rich plasma biomembrane

**Case Presentation:** Introduction: Traumatic bone cyst is an uncommon intra-osseous, non-epithelial lined cystic cavity, most commonly seen in young individuals, of higher prevalence in males. Cyst enucleation is the most adopted line of treatment. The use of guided tissue regeneration (GTR) techniques may further serve as an adjunct to enucleation to promote better bone healing. It was hypothesized that the use of a Platelet-rich-plasma (PRP) biomembrane may enhance bone regeneration following traumatic bone cyst enucleation.

**Objective:** To report an unconventional approach to manage a case of traumatic bone cyst of the mandible using a Platelet-rich-plasma (PRP) biomembrane.

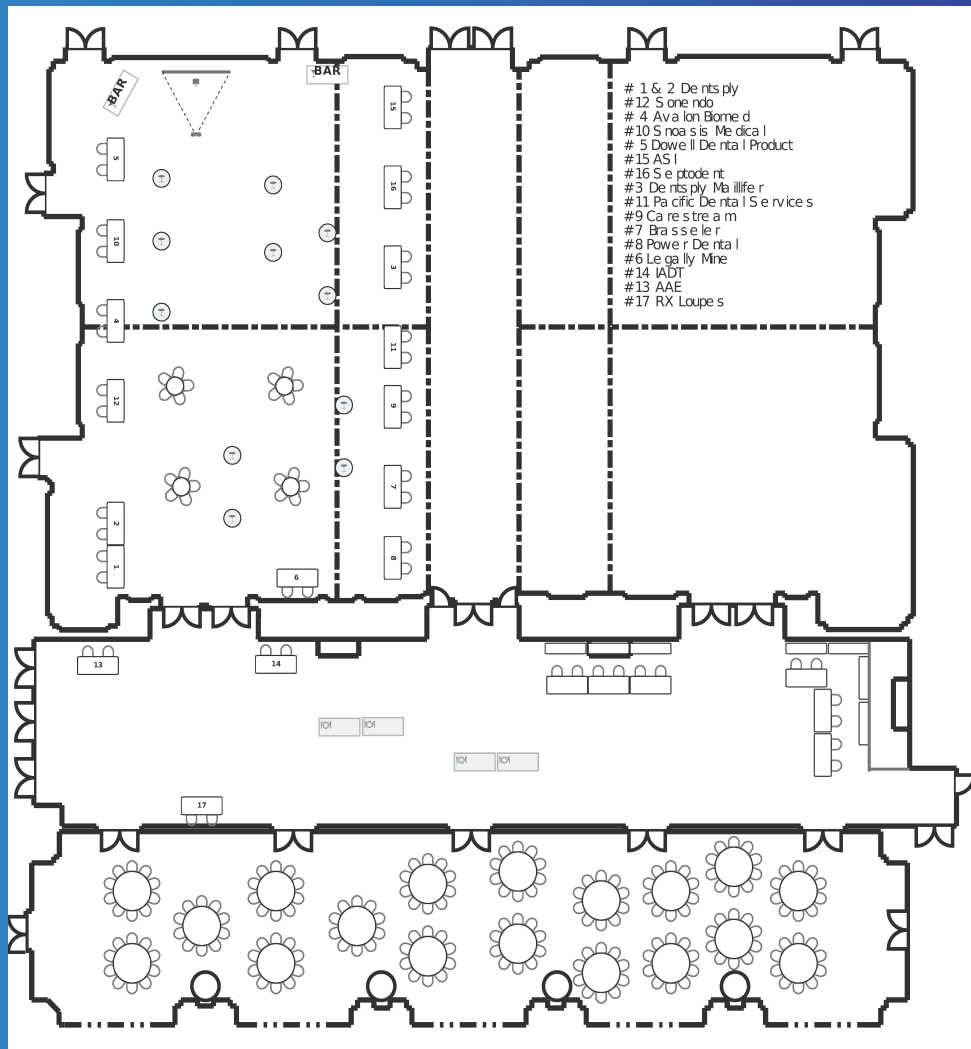
**Methodology:** A 20 year old male patient presented with previously accessed lower anterior teeth with no relevant history. Patient was asymptomatic with teeth oozing pus upon clinical examination. Digital periapical radiographs and CBCT revealed a festooned bilobular radiolucent lesion related to the lower central incisors. An excisional biopsy confirmed the lesion to be a traumatic bone cyst. Root canal treatment was performed for the related teeth and surgical enucleation was done with the adjunctive use of an autologous Platelet-rich plasma biomembrane as a grafting material. Excised tissue was sent for confirmatory histopathological analysis. The patient was followed up clinically and radiographically up to 1 year and a half post-surgically.

**Results and conclusion:** Rapid and complete resolution of the lesion, and bone regeneration were observed after six months and till the end of follow-up. In conclusion, autologous platelet-rich-plasma (PRP) biomembrane may serve as an endogenous regenerative tool to enhance bone regeneration following traumatic bone cyst enucleation.

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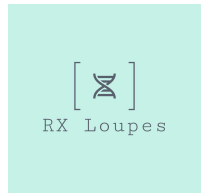
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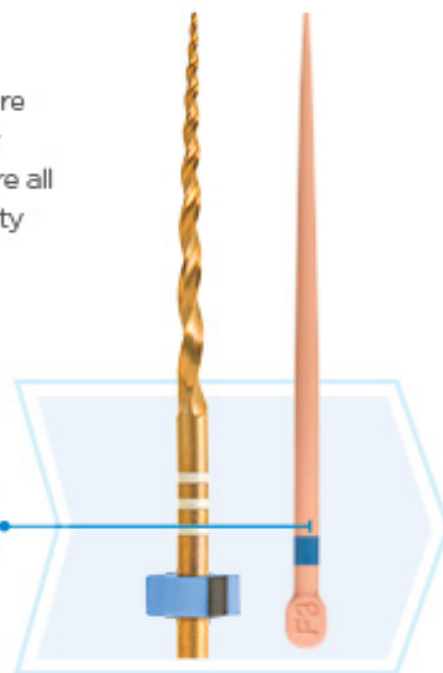
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