The 22nd World Congress on Dental Traumatology

WCDT 2024 TOKYO

His wish is to protect the future of children
who have suffered dental trauma.

The Father of Dental Traumatology / Dr. Jens Ove Andreasen

CONGRESS PROGRAM AND HANDBOOK

Date：July 12th - 15th, 2024

Venue：Hitotsubashi Hall (Tokyo,JAPAN)

Theme Protect the future of patients

Hosted by

IADT International Association of Dental Traumatology
Esthetics · Biology · Compassion
Since 1989

JSDTA 日本小児歯科学会 1991

Thinking ahead. Focused on life.

MORITA

Veraview X800

New Frontier of the X-ray

ベラビュー X800は、CT撮影に加えパノラマ/セファロ撮影を1台で可能にしたAll-in-oneタイプのX線診断装置。高解像度、ボクセルサイズ80μmのCT撮影を実現。CT撮影は、水平にX線を照射することで、アーチファクトの少ない画像を取得できます。

さらに、高精細な360度CT撮影モードとハイスピードで低照射線量の180度CT撮影モードを搭載し、診断目的に合わせた撮影を行うことができます。

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詳細はこちら

iF GOLD AWARD 2017

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お問合せ: お客様相談センター 歯科医療従事者様専用 T 0800. 222 8020（フリーコール）　製造販売・製造　株式会社 モリタ製作所 京都市伏見区東浜南町680 〒612-8533 T 075. 611 2141
販売名: ベラビュー X800　標準価格: 9,600,000円～（消費税別途）2019年3月21日現在　一般的名称: デジタル式歯科用パノラマ・断層撮影X線診断装置
機器の分類: 管理医療機器（クラスII） 特定保守管理医療機器　医療機器承認番号: 228ACBZX00008000
詳細な製品情報につきましては、こちらを参照ください。 http://www.dental-plaza.com/article/veraview_x800

HDX WILL

BSA

パノラマ X 線撮影装置

eco-X AI

（エコ エックス エー アイ）

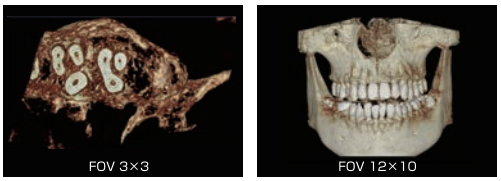
充実装備で
1台598万円〜

AI 技術の革新

eco-X AI シリーズは独自の AI 画像再構成技術により高画質かつ低線量を実現。CT、パノラマ、セファロ、モデルスキャン撮影が可能な 4in1 デジタルレントゲンです。

エンドからインプラント治療まで使える 高画質 3D 画像

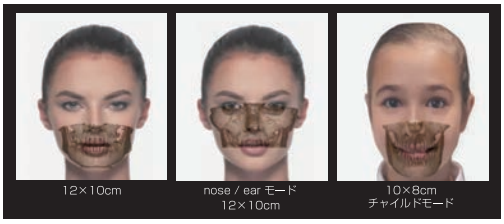
■より鮮明な画像でエンド治療にも 3D で多角的にアプローチ！撮影方法は 360 度軌跡のフルアーチ



HDX WILL 独自の AI 画像再構成技術により、各ボクセルの最適な値を見つけ画像のコントラストと鮮明さを向上。色調の細かさである階調度は 16bit。
65,536 階調の滑らかなグラデーションが鮮明な画像で多角的診断をサポートし、エンド治療でも MB2（近心第二根管）などを３次元で確認し、より精度の高い治療をサポートします。

臨床ニーズに応じて多角的に対応可能な 広い視野

最大 12 ×10 cm の広い FOV により、下顎下縁を含む上下の歯列全体、小児歯列 *(FREE FOV: 撮影領域を任意に選択）をそれぞれ撮影することができます。

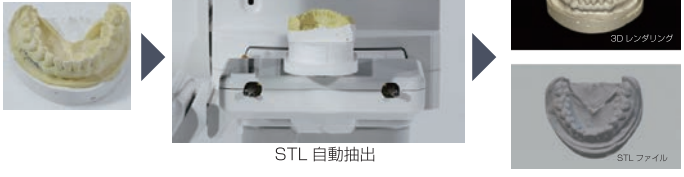


オートトレーシングランドマークを自動的に識別してトレーシング

WillCeph の自動トレース機能を使用することで、矯正解剖学的ランドマークポイントを自動的に識別し、解剖学的構造を描き、測定レポートを出力することができます。*WillCeph ソフトウェアの購入が必要になります。

CT スキャンと並行し自動 STL ファイル抽出 モデルスキャン機能

印象 / 石膏模型の STL と DICOM データを一括抽出、モデルスキャンによりデジタル診療を実現。データをデジタルストレージとしてご活用いただけます。補綴修復物製作において、精密な咬合関係や矯正情報をデジタル化し、CAD/CAM との連動を可能に。



STL 自動抽出

詳しくはこちら

■販売名：エコ エックス

一般的名称	アーム型 X 線 CT 診断装置
認証番号	305AKBZX00075000

BSA [発売元] 株式会社ビーエスエーサクライ TEL.052−805−1181 https://www.bsa-sakurai.co.jp

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WELCOME

On September 26, 2020, the father of dental traumatology, Dr. Jens Ove Andreasen, passed away. His enormous contribution to the development of dental traumatology cannot be described in words. In fact, dental traumatology might not have been established without his vision and continuous activities.

Despite the high prevalence of traumatized teeth, dental trauma education is still lacking in many dental schools around the world. Traumatic dental injuries are frequent in young individuals, such as school-aged children. Dental trauma is an acute condition with potential chronic consequences. It usually involves different issues such as the tooth hard tissue, dental pulp, periodontal ligament, alveolar bone, and gingiva, and therefore general knowledge and skills in dentistry are essential for proper understanding, diagnosis and treatment of these injuries. In addition, higher healing ability of the body due to the young age and the principle that it is basically different from infectious diseases have made treatments more conservative and biological for tooth, pulp, periodontal ligament and bone.

WCDT 2024 is the first World Congress on Dental Traumatology held after Dr. JensOve Andreasen passed away and it is positioned as an important academic event to celebrate Dental Traumatology and the legacy he left behind to pass on to future generations. His wish is to protect the future of children who have suffered dental trauma.

Join us in Tokyo for the greatest educational event of 2024 in dental traumatology!

We are looking forward to having fun learning together with everyone around the world under the theme of “quote; protecting the future of children”.

Dr. Hideyuki Izumi
WCDT 2024 Conference President

HOST ASSOCIATIONS

The International Association of Dental Traumatology (IADT)

Japan Society of Dental Traumatology and Autotransplantation of Teeth (JSDTA)

COMMITTEES

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

The International Association of Dental Traumatology (IADT)

Dr. Liran Levin

Japan Society of Dental Traumatology and Autotransplantation of Teeth (JSDTA)

Dr. Hideyuki Izumi
Dr. Noriaki Yoshida
Dr. Taisuke Tsukiboshi

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

Scientific Program Committee (IADT)

Dr. Liran Levin
Dr. Fabricio Teixeira

CONGRESS VENUE

Venue 1: Hitotsubashi Hall (JUL. 12-15)

National Center of Sciences Building
2-1-2 Hitotsubashi,Chiyoda-ku,Tokyo 101-8439

- Registration Desk/Tokyo City Information Desk
- Pre-Congress/Keynote Lectures/Oral Presentations/Poster Presentations
- Exhibition
- IADT Board Meeting (JUL. 12)
- Lunch (JUL. 14)

Venue 2: TKP Garden City PREMIUM Jimbocho (JUL. 13 ONLY)

TERRACE SQUARE 3F
3-22 Kanda Nishiki-cho, Chiyoda-ku, Tokyo 101-0054

- Satellite Rooms
- Table Clinic (Luch& Learn) *Ticket Required
- Lunch (JUL. 13)

Venue 3: Gakushi Kaikan (JUL. 14 ONLY)

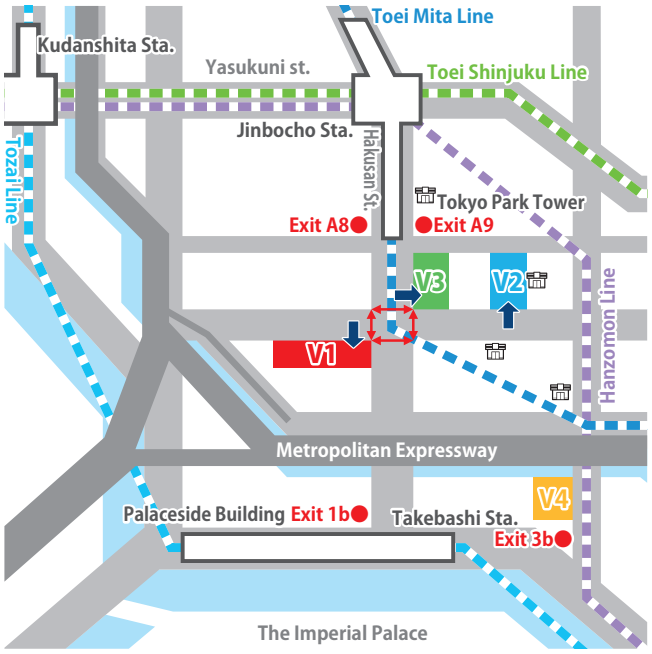
3-28 Kandanishiki-cho Chiyoda-ku, Tokyo 101-8459

- Satellite Rooms
- Dental Hygienist Session (in Japanese only)
- Lunch (JUL. 14)
- Gala Party (July 14) *Ticket Required

Venue 4: KKR Hotel

1-4-1, Otemachi, Chiyoda-ku, Tokyo 100-0004

- IADT Fellowship Committee Breakfast Meeting (JUL. 13)
- Dental Traumatology Journal Editorial Board Meeting (JUL. 14)

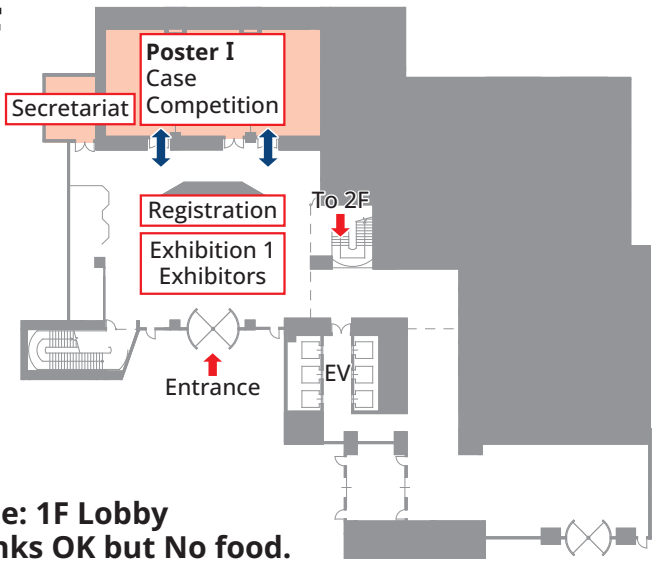


V1 : Hitotsubashi Hall,
National Center of Sciences Building
V2 : Terrace Square(TKP Jimbocho)
V3 : Gakushi Kaikan
V4 : KKR Hotel
Convenience Store

Floor Plan

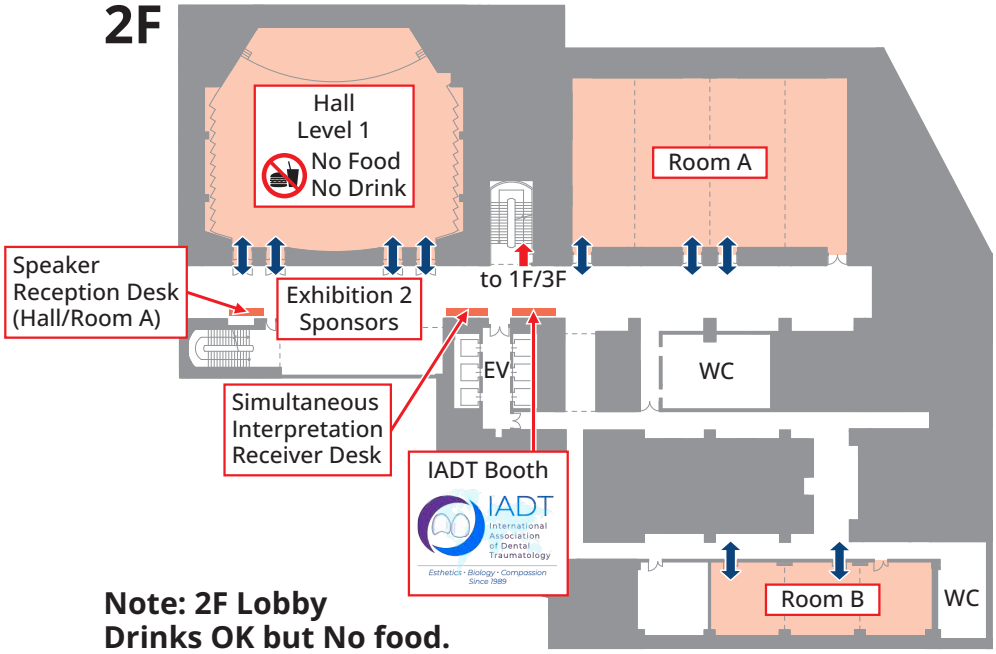
Venue 1: Hitotsubashi Hall, National Center of Sciences Building

1F



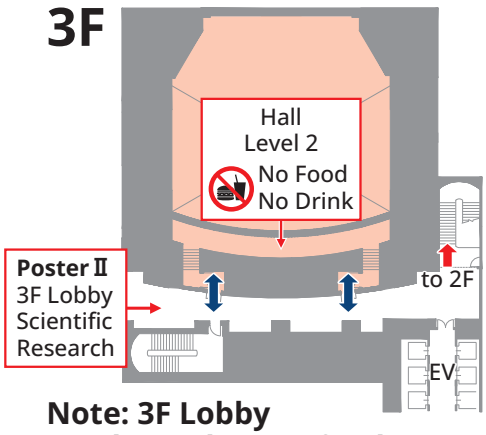
Note: 1F Lobby
Drinks OK but No food.

2F



Note: 2F Lobby
Drinks OK but No food.

3F

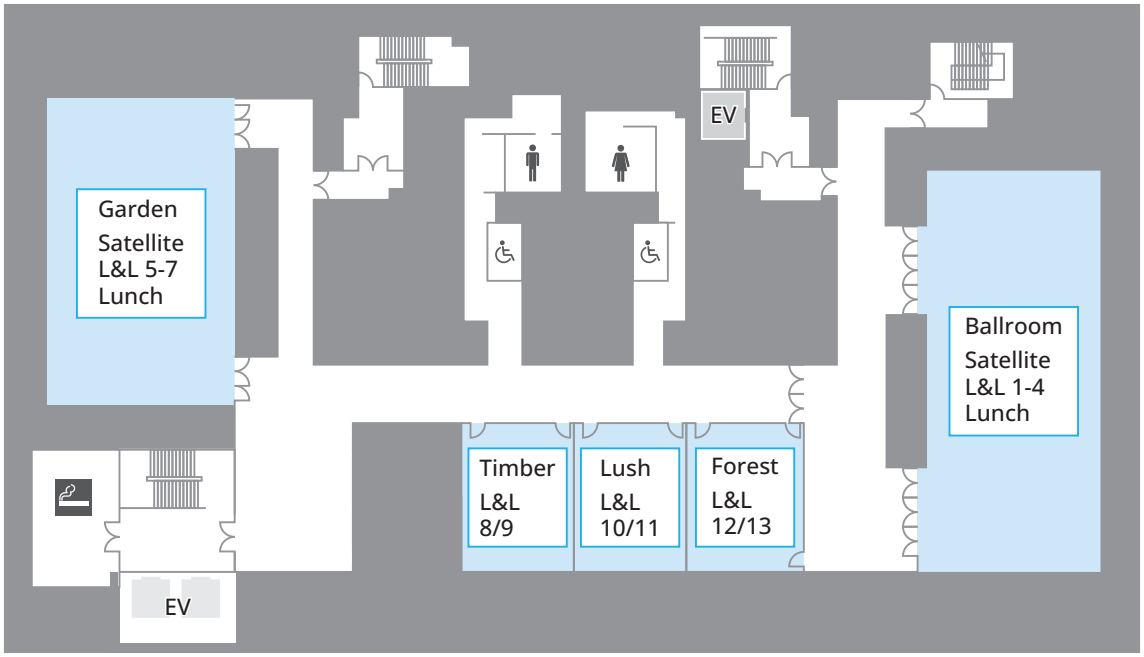


Note: 3F Lobby
Drinks OK but No food.

Venue 2: TKP Garden City Premium Jimbocho, 3F, Terrace Square Bldg.

July 13 (Saturday) Only.
Note: Lunch for July 13 will be served at this venue only.

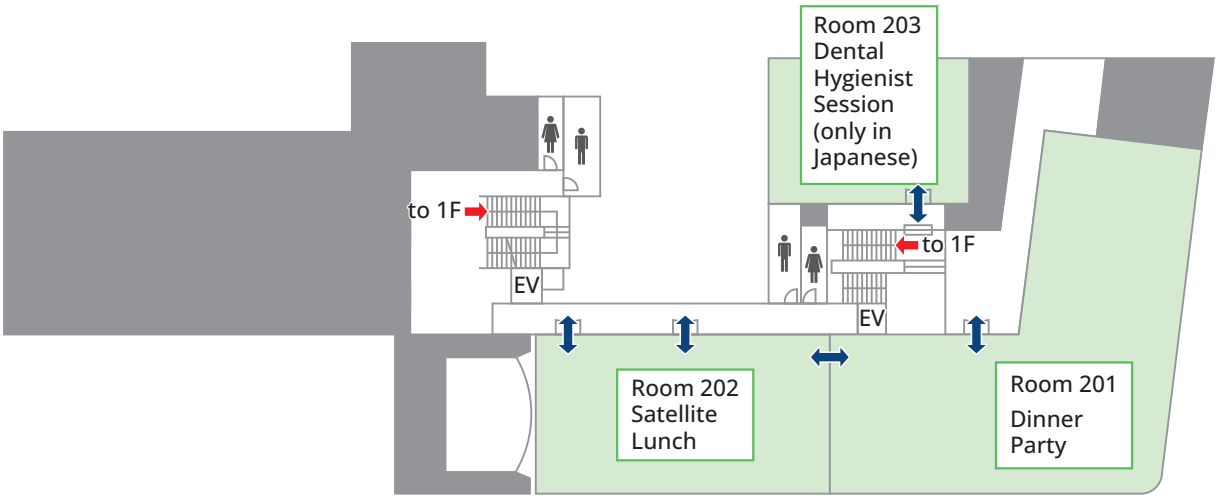
3F



Venue 3: Gakushi Kaikan

July 14 (Sunday) Only.
Note: Lunch for July 14 will be served at both this venue and Venue 1(Hitotsubashi Hall).
Gala Party Venue 18:00~21:00 (Registration required in advance)

2F



GENERAL INFORMATION

BANKING FACILITIES-ATMS

ATMs can be found at the convenience stores around the venue. Please note, not all ATMs in Japan accept international cards. Look for ATMs marked as international, which typically offer services in multiple languages, including English, if they support international card transactions.

BUSINESS SERVICES

Business support services such as photocopying and printing are NOT provided at the venue. If you need printing services, please visit the convenience stores.

CHILDCARE

Please note no official arrangements have been made for childcare during the congress.

CLIMATE

July in Tokyo marks mid-summer, with temperatures ranging from 25 to 32 degrees Celsius (77 to 89.6 degrees Fahrenheit) on average.

Refreshments& Lunch

Refreshments will be served in the Room A at Venue 1, Hitotsubashi Hall.
Lunch will be provided at the following venues on different dates:

Date	Lunch Venue
JUL. 13	Venue 2: TKP Garden City PREMIUM Jimbocho
JUL. 14	Venue 1: Hitotsubashi Hall
	Venue 3: Gakushi Kaikan

DISCLAIMER

The WCDT Congress, including the Congress organizers, 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 2024 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 venue staff. Please also find below the safety tips for travelers provided by Japan Tourism Agency:
https://www.jnto.go.jp/safety-tips/eng/
Emergency telephone numbers
Police: 110
Fire / Ambulance: 119

Japan Visitor Hotline

JNTO operates a visitor hotline 24 hours a day, 365 days a year. Call for tourist information or assistance in the case of accidents and emergencies including COVID-19. Support is available in English, Chinese and Korean.
From Japan 050-3816-2787
From Overseas +81-50-3816-2787

Chatbot (in case of emergencies only) :
https://bot.japan-travel.jnto.go.jp/emergency

INSURANCE

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

INTERNET

Wi-Fi is available at the conference venue; the information will be displayed in front of each room.

LANGUAGE

The official languages of the congress are English and Japanese. Interpretation services for keynote lectures will be provided on the 2nd floor of Venue 1. If you require an interpretation receiver, please exchange your ticket attached to your name card. Please remember to return the receiver when leaving the building.

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.

SMOKING POLICY

The Venue 1 Hitotsubashi Hall is a non-smoking venue. Designated smoking area is provided at Venue 2 and Venue 3.

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

Tokyo operates on Japan Standard Time (JST), which is UTC+9. This time zone does not observe daylight saving time, so the offset remains consistent throughout the year.

SOCIAL PROGRAM

Tokyo Bus Tour
Date & Time: July 13th (SAT.) Night 17:30-20:30

Free of charge for conference participants, accompanying persons and family members. Please sign up for the tours at the "TOKYO CITY INFORMATION DESK" located near the registration area at Hitotsubashi Hall. Bookings are accepted from July 13th (SAT.) on a first-come, first-serve basis.

Tokyo Convention & Visitors Bureau offers several complimentary programs specially tailored to provide overseas registered participants with various experiences of Tokyo, from nature and culture to other attractions. (The tour courses are subject to change).

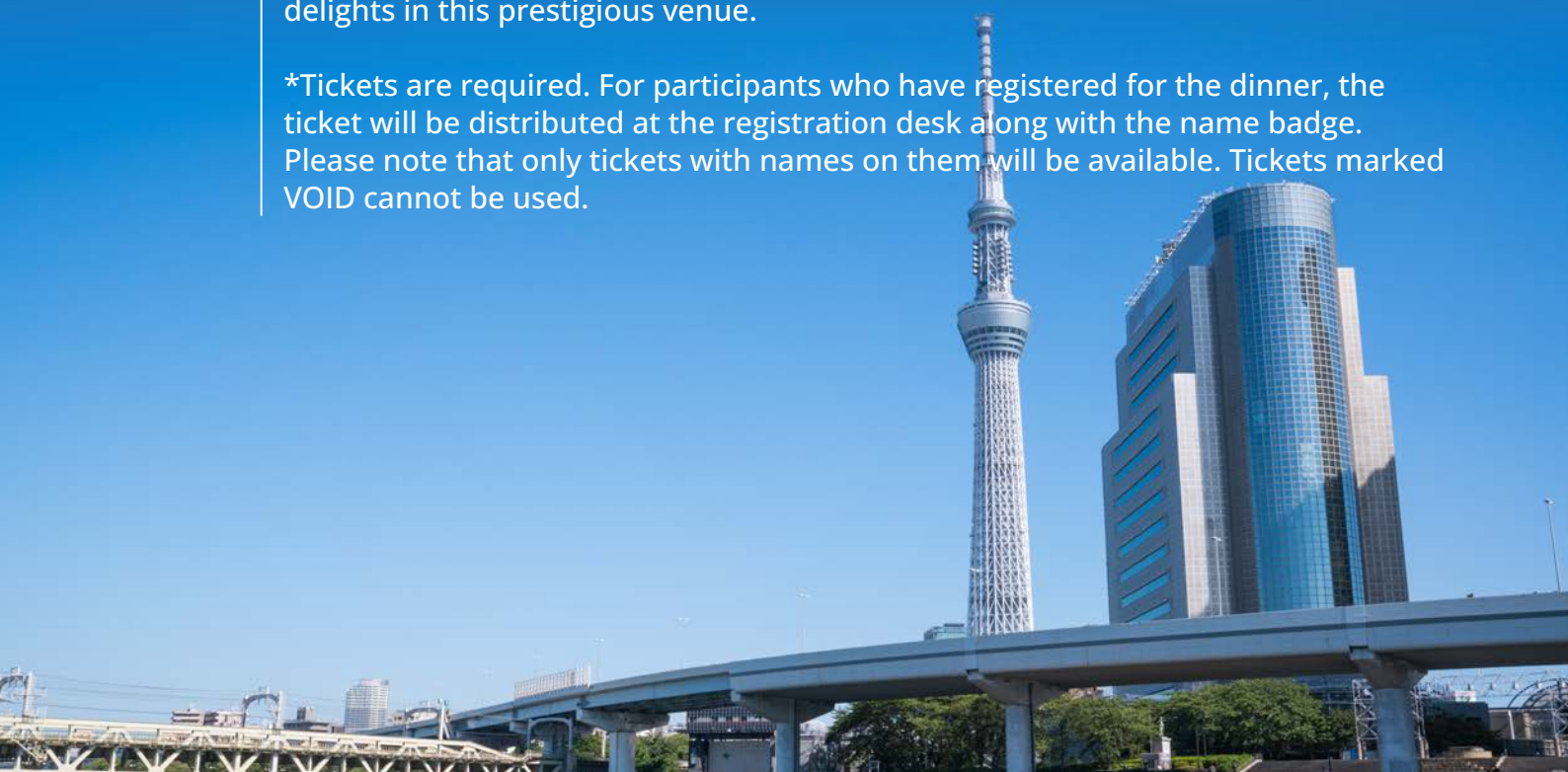
Tour A: Tokyo Tower & Odaiba Area
After relaxing and enjoying the view from the observation deck located 150 meters above ground in the Tokyo Tower, visitors will walk over the Rainbow Bridge to explore the Odaiba area.

Tour B: Tokyo SKYTREE & Tokyo Solamachi
After enjoying the view from the Tokyo SKYTREE, the world's tallest radio tower, visitors will spend time at Tokyo Solamachi, which houses a planetarium, an aquarium, restaurants, and more than 300 stores.

WCDT 2024 Gala Party
Date & Time: July 14th (SUN.) Night 18:00-21:00
Place: Venue 3 Gakushi Kaikan 201-203
Dress: Business Casual

The dinner party for WCDT 2024 promises an unforgettable evening at Gakushi Kaikan, renowned for its elegant ambiance and exquisite cuisine. Nestled in the heart of the city, attendees will enjoy a night of networking and gastronomic delights in this prestigious venue.

*Tickets are required. For participants who have registered for the dinner, the ticket will be distributed at the registration desk along with the name badge. Please note that only tickets with names on them will be available. Tickets marked VOID cannot be used.



SPEAKERS

Lars Andersson

Graduated from Karolinska Institute Sweden. Specialist Oral and Maxillofacial Surgery (OMFS). Professor OMFS at Faculty of Dentistry, Kuwait University 2002-2017. Senior Professor OMFS Malmö University, Sweden. Published more than 200 original research papers in scientific journals. Received more than 13000 scientific citations, H factor 56. Editor of five textbooks in Trauma and OMFS. Editor-in-Chief of the scientific journal, Dental Traumatology 2007-2015. President of IADT 2011-2014.

Domenico Ricucci

Dr. Domenico Ricucci received his degree in General Medicine from “La Sapienza” University of Rome in 1982, and his DDS from the same University in 1985.
Dr. Ricucci’s primary research interest relates to pulpal and periapical tissue reactions to caries and treatment procedures, biofilms in endodontic infections, etiology of RTC treatment failure, pulp regeneration. Dr Ricucci has published 115 papers. He has authored the Textbook and Atlas “Endodontology, and 22 book chapters.

Liran Levin

Prof. Liran Levin is a professor of periodontology at the University of Alberta, Canada and a visiting professor at the Harvard School of Dental Medicine.
Prof. Levin serves as the Editor-in Chief of Dental Traumatology, is currently the President of the International Association for Dental Traumatology (IADT).
Prof. Liran Levin has published more than 300 articles and book chapters and is involved in research mainly in periodontology, dental implants and dental trauma.

Anne O’Connell

Professor in Paediatric Dentistry Trinity College, Dublin, Ireland. Fellow of IADT, AAPD and PFA. Anne servedas President for 4 years and is currently Past-President. She was also instrumental in setting up the Fellowship process. Her areas of interest include traumatic oral injuries, dental education, infant oral health, cariology, and developmental defects of the dentition and actively publishes and lectures extensively on these topics.

Zafer Cehreli

Dr. Cehreli is professor of Pediatric Dentistry at Hacettepe University, Ankara, Turkey; where he has been for most of his career. He has published over 150 papers in peer-reviewed journals, has co-authored in several textbook chapters, and his publications have been cited extensively. He is the President-Elect of the International Association of Dental Traumatology (IADT) and has Chaired the Education Committee of the IADT for 6 years, during which he led the team that developed ToothSOS, the official app of the IADT. He is an active member of the American Academy of Pediatric Dentistry, International Academy of Paediatric Dentistry and International Association of Dental Research. Dr. Cehreli has received several national and international awards in research. His clinical and research interests include pediatric endodontics, dental traumatology and pediatric esthetic dentistry, and has lectured extensively on these topics in Europe, Americas and Asia and Africa.

William (Bill) Kahler

Bill maintains a full-time specialist private practice Endodontist and is a Clinical Professor at the University of Sydney. He is a Board member and Treasurer of the IADT and an author on the 'IADT Guidelines for management of traumatic dental injuries'. Bill has published more than 80 papers and is a contributing author for 6 book chapters including the iconic North American and European texts, "Pathways of the Pulp" and the "Textbook and Color Atlas of Traumatic Injuries to the Teeth".

Fabricio Teixeira

Dr. Fabricio Teixeira is an Endowed Professor and the Chair of the Department of Endodontics at the University of Iowa. He obtained his Certificate in Endodontics at UT San Antonio and is Past Director of the American Board of Endodontics. He serves as Secretary of the IADT and CODA Commissioner for the AAE. He has lectured internationally on several topics and published multiple articles and textbook chapters. He also maintains a private practice limited to endodontics in Iowa City.

César de Gregorio

Dr. De Gregorio received his dental degree from the UEM in 2007. He completed the Endodontic Program at the UEM with Honors and received the AEDE Best Research Award. He became Professor at the University of Washington, where served also as an endodontist at the Center for Pediatric Dentistry. He serves as a Board Director of the International Association of Dental Traumatology (IADT). Actually, he serves as a Sub-Director of the Graduate program in Endodontics at Universidad Rey Juan Carlos.

Michał Sobczak

He is Paediatric Dentistry Specialist. He received his Dental and PhD degrees from the Medical University of Warsaw, Poland. Currently, he operates a private clinic in Warsaw, Poland, with a focus on providing interdisciplinary treatment for dental trauma patients.
He is a founding member and Past President of the Polish Academy of Pediatric Dentistry.
Currently serves as a board member of the IADT and EAPD.

Nitesh Tewari

Dr. Nitesh Tewari has been active in Pediatric Dentistry and Dental Traumatology clinical care and research with 121 publications and six textbook contributions. He has lectured in over a hundred events across several states and 16 countries. His works have been awarded by IADT, IAPD, Craniofacial Research Foundation, IADR, Japan Dental Association, IFEA, Royal College of Surgeons of Glasgow, and several other associations.
He is a fellow of six societies and presently serves as the Director of the International Association of Dental Traumatology, General Secretary of the ISDT, and secretary of the Evidence-based dentistry network of IADR.

Georgios Tsilingaridis

Dr. Georgios Tsilingaridis graduated at the Karolinska Institute in 1997, got his pediatric dentistry specialisation in 2004 and defended his doctoral dissertation in 2013.
He is an associate professor and vice dean at the department of Dental Medicine, Karolinska Institutet.
He is a board-member of the IADT.
He is the author and co-author of several original scientific publications and co-author of in the new Textbook and Color Atlas of Traumatic Injuries to the Teeth.

Geertje Van Gorp

Geertje Van Gorp is a certified dentist. She obtained a specialization in Paediatric Dentistry and Special Dental care and a specialization in Endodontics at the KU Leuven. She is currently working as a pediatric dentist-endodontologist at the Catholic University of Leuven (Belgium) where she provides dental treatment to children and adolescents, with main focus on dental traumatology and management of carious lesions in primary and (immature) permanent dentition. She has obtained the fellowship of the International Association of Dental Traumatology and she is currently a member of the board of Directors of the International Association of Dental Traumatology.

Yuli Berlin-Broner

Dr. Yuli Berlin-Broner is an Assistant Professor, a former acting Head of the Division of Endodontics at the University of Alberta, and a practicing endodontist in private practice. She received her DMD with distinction from Tel-Aviv University in 2009, completed her post-graduate program in Endodontology at Hebrew University-Hadassah Medical Center in 2014, and in the University of British Columbia in 2019. She also received her MSc in Medical-Sciences, Oral Biology from the U of A in 2018. Dr. Yuli Berlin-Broner is a Board Director and a Fellow of the International Association of Dental Traumatology, a Fellow of the Royal College of Dentists of Canada, and a member of the Canadian Association of Endodontics, and the American Association of Endodontics.
Dr. Berlin-Broner serves as a reviewer in multiple scientific journals, including the Dental Traumatology Journal, and has published papers and presented at multiple national and international conferences. Her research focuses on Dental traumatology, Endodontic and Systemic Health, and Education.

Peter Duckmanton

Peter has retired from clinical practice and now works in regulatory roles within the profession....he was previously head of the Endodontic Department at Sydney Dental Hospital and and Adjunct Associate professor at the University of Sydney. He has held many roles and positions within the profession over the last 40 years.

Lumnije Kqiku

Lumnije Kqiku MD, DDS, PhD graduated from the Faculty of Medicine, Department of Dentistry, at the University of Pristina. She nostrified her diploma at the Medical University of Graz (Austria), to complete her doctorate in 2004.
Kqiku is the Academic Lecturer and Head of the Special Unit of Endodontics and Dental Traumatology in the University Dental Clinic Graz as well as Deputy Speaker for Doctoral Studies in the Dentistry section and Vice President of the Austrian Dental Traumatology.
She is academic lecturer for students of General Medicine, Dentistry, and postgraduate studies. She is Certified (specialist) in the field of Endodontics and Dental Traumatology from the University of Prishtina / Kosova and Medical University of Graz, Austria.
Previous academic (scientific researcher) positions include the Faculty of Dentistry at the University of Zagreb (2007) and the Medical University of Tübingen, Germany/ Prof.C. Löst past President of European Society of Endodontology (2010). Since 2018, she held the academic position of Univ. Doz. Dr.med.dent at the Medical University of Graz, Austria.
Kqiku is the embodiment of the academic endodontist and traumatologist, an avid researcher and endodontic educator with international and global interests. Her clinical and research interests are complex dental trauma, modern endodontics, and general dentistry.
She is the author and co-author of numerous professional scientific peer-reviewed publications in such area.
Kqiku has received many research awards and has been invited to many countries where she has held numerous “keynote” lectures as a national international speaker and served as an expert in endodontics and dental traumatology. She is a member of many local and international dental associations, as well as a reviewer and serves on the editorial boards of many international peer-review journals scientific journals.
April 2023 Kqiku has been honored with the “Honorary personality with gold medal” Award from the City of Graz Austria.

Nestor Tzimpoulas

Dr. Nestor Tzimpoulas received his DDS degree in 2009 from the University of Athens, School of Dentistry in Greece. He received his 3-year post-graduate diploma in Endodontics in 2016 from ACTA, University of Amsterdam, The Netherlands. Since 2016 he works in private practices limited to Endodontics and dental trauma in The Hague, The Netherlands and in Athens, Greece. In 2021 Dr. Tzimpoulas received the Fellowship award from the International Association of Dental Traumatology (IADT).

Yoshiro Iida

Graduated from Okayama University School of Dentistry in 1992, founded Nadyapark Dental Clinic in Nagoya in 1996. Earned a Ph.D. from Matsumoto Dental University in 2007 and a Certificate in Implant-based Therapy from EAO in 2015. Published a book on aesthetic implant treatments in 2023 and a paper on the socket-shield technique in the International Journal of Esthetic Dentistry. Focuses on high-quality implant care using advanced technology in Nagoya, actively delivers lectures and seminars.

Tomohiro Ishikawa

Dr Tomohiro Ishikawa Graduated from Hiroshima University School of Dentistry in 1988, he is the founder and instructor of 5-D Japan, an institute of periodontics, endodontics, implantology, microscopic dentistry, and esthetics, since 2008. in addition to 5-D Japan, he is an instructor for the Japanese Society of Clinical Periodontology and lectures throughout Japan and North America, He has lectured throughout Japan, North America and Europe.

He is a member of the Japanese Society of Clinical Periodontology, the American Academy of Periodontology, the European Academy of Cosmetic Dentistry, and the Society of Osseointegration. He has also served in the past as president of the Japan Osseointegration Study Club.

He has been practicing at Ishikawa Dental Clinic in Hamamatsu since 1996.

Hideyuki Izumi

2000年　日本大学松戸歯学部卒業
2000年　日本大学松戸歯学部　歯科補綴学第Ⅲ講座
2004年　西本歯科医院（滋賀県長浜市）
2021年　泉歯科医院 院長（滋賀県長浜市）

Takafumi Otani

2004 Graduated from Osaka University School of Dentistry
2008 Graduated from Osaka University School of Dentistry Ph.D Program
2014 Graduated from Graduate Prosthodonitcs Program at University of Washington
Obtained Master of Science
2017 Opened DENTAL OFFICE OTANI (Osaka, Japan)

Tomonari Hirai

1991年　九州大学歯学部卒業
1999年　平井歯科クリニック開業
歯学博士
九州大学歯学部臨床教授
日本歯周病学会専門医、指導医
日本口腔インプラント学会専門医

Hiroyuki Saida

2002年東京医科歯科大学歯学部卒業
日本歯周病学会　指導医／歯周病専門医
東京医科歯科大学　臨床教授　日本臨床歯周病学会　指導医／歯周インプラント認定医

Katsu Takahashi

1995 Graduated from Kyoto University Graduate School of Medicine, Doctor of Medicine
1995 Visiting Scholar, University of Southern California, USA
1996 Visiting Scholar, NIH-NIAMS, USA
2013 Associate Professor, Department of Oral and Maxillofacial Surgery, Kyoto University Graduate School of Medicine
2020 Co-founder and Chief Technology Officer, Tregem Biopharma, Inc.
2021 Chief Director, Department of Dental Surgery, Kitano Hospital, Tazuke Kofukai Medical Research Institute

Teppei Tsukiyama

Dr. Tsukiyama received his dental degree from Kyushu University, Japan. He completed his residency in periodontics, Master of Science and advanced education in esthetic dentistry at the department of prosthodontics at Tufts University School of Dental Medicine. Upon graduation he was awarded the “certificate of surgical excellence”. He is diplomate, American Board of Periodontology and EAO certificate of Implant-based Therapy. Dr. Tsukiyama has a private practice in Fukuoka Japan limited to periodontics and aesthetic dentistry. He has been active in providing continuing education nationally and internationally. He is also an active member of various professional associations. He has published numerous scientific articles related to periodontics and implant dentistry, and is the Co-editor of the “Manual of Clinical Periodontics 4th Edition”.

Mitsuhiro Tsukiboshi

Dr. Tsukiboshi is the President of the International Association of Dental Traumatology in 2009 and 2010. Dr. Tsukiboshi was rewarded with ‘Jens Ove Andreasen Lifetime Achievement Award in dental Traumatology’ in 2018.

TaisukeTsukiboshi

Dr. Taisuke Tsukiboshi received his Doctor of Dental Surgery from the Aichi-Gakuin University School of Dentistry in Nagoya, Japan and his PhD in Prosthodontics from Osaka University Japan. He has also completed a Fellowship in Implant Dentistry from the Loma Linda University School of Dentistry. Dr. Tsukiboshi is currently in clinical practice at the Tsukiboshi Dental Clinic in Aichi, Japan, while also holding the position of Instructor for Internship Students at the Osaka University, School of Dentistry.Dr. Tsukiboshi is an Associate Fellow of the American Academy of Implant Dentistry and is also an Official Instructor for Bassi Logic.

Yosuke Tsukiboshi

D.D.S. at Tohoku University (2013, Japan)
Ph.D. in orthodontics at Osaka University (2020, Japan)
Preceptorship at the University of Texas Health Science Center at Houston, Department of Periodontics and Dental Hygiene (2022, USA)

Orthodontist (JOS board certified)
Director of Japanese Society of Dental Traumatology and Autotransplantation
Lecturer of CE seminar (Digital, periodontal surgery, and orthodontics)

Hidetoshi Aimiya

2004年3月　愛知学院大学 歯学部 卒業
2004年～　愛知学院大学 歯学部 歯科放射線学講座 入局
2004年3月～2015年3月 医療法人 至誠会 二村医院 勤務
2015年5月　吹上みなみ歯科開設
2019年3月　歯学博士 取得
現在に至る
愛知学院大学歯学部歯科放射線学講座　助教(非常勤)
東海歯科医療専門学校(顎口腔機能学)講師
ナゴノ福祉歯科医療専門学校(歯科放射線学)講師

Shogo Ando

Dr. Shogo Ando is a periodontist, having obtained his DDS degree from Asahi University. He has been engaged in private practice since 2012 and now hires more than 80 employees. Shogo is passionate about digital dentistry, particularly in the area of reconstructioning of anterior aesthetic zone.

Shinya Iida

I graduated from the School of Dentistry at Aichi-Gakuin University in 2006. After working for a private practice dentist, I have been working at Iida Dental Clinic since 2011.

Takeshi Tokura

Dr. Takeshi Tokura graduated in 2004 and obtained his PhD in Paediatric Dentistry from Aichi-Gakuin University in 2008. He also served as Visiting Researcher at the Division of Oral Biology, University of Leeds in the UK from 2005 to 2006 in his PhD years. He currently owns a private clinic specialized in Paediatric Dentistry and Orthodontics for children. He has been a Board Certified Supervisor of Paediatric Dentistry from Japanese Society of Paediatric Dentistry. His professional interests are in the field of Eruption Disturbances, Behaviour Management of Children and Guardians.

Takanobu Haruki

1989 Graduated from Okayama University Dental School
1989 Kanomi Orthodontics and Pediatric Dentistry Clinic
1996 Visiting Assistant Professor, University of Washington School of Dentistry
1997 Assistant Professor, Okayama University Dental School
1999 Opened Haruki Pediatric, Orthodontics Clinic

Kazuhiro Fukunishi

1986年　大阪大学歯学部卒業
1997年　福西歯科クリニック　開院
2000年　大阪大学歯学部　非常勤講師（口腔総合診療部）
2006年　大阪大学歯学部　臨床准教授
2008年　5-D　Japan（石川、北島、船登、南らと）設立
2009年　医療法人　宝樹会　設立

《資格》
日本歯内療法学会　指導医
日本顎咬合学会　指導医
日本臨床歯周病学会　指導医・歯周インプラント指導医
公益法人　日本口腔インプラント学会　専門医
国際外傷歯学会（IADT）　フェロー

Yoshinobu Maeda

Yoshinobu Maeda DDs.Ph.D
大阪大学大学院歯学研究科　名誉教授
招聘教授
Osaka University Graduate School of Dentistry　Professor Emeritus and invited
医療法人　サラヤ健育会　理事長
Director for Saraya Healthcare Corporation

Noriaki Yoshida

1997年　明海大学歯学部卒業
2000年　代々木クリスタル歯科医院院長
2004年　医療法人社団大輝会理事長
2017年　明海大学客員講師2021年　東京オリンピック歯科担当医など歴任
2024年　第22回WCDT日本組織委員会実行委員長

Tetsuya Mizukami

1985年　九州大学歯学部卒業
1987年　九州大学第1補綴学教室文部教官助手
1989年　西原デンタルクリニック勤務
1992年　福岡県福津市（旧宗像郡）にて開業
2007年　九州大学歯学部臨床教授
2011年　鹿児島大学歯学部非常勤講師

【所属及び所属学会等】
日本臨床歯周病学会　認定医・歯周インプラント認定医
日本歯周病学会　指導医・専門医
日本顎咬合学会　指導医
日本口腔インプラント学会
近未来オステオインプラント学会　指導医

Yuko Shimoda

1996年　福岡医科歯科技術専門学校（現博多メディカル専門学校）歯科衛生士科卒業
同年　医療法人水上歯科クリニック勤務
現在に至る

日本歯周病学会認定歯科衛生士
日本臨床歯周病学会指導歯科衛生士

Seiichi Sugiyama

1958年　東京生
1983年　東京歯科大学卒業
1983~1986年　東京都千代田区五番町福島歯科医院勤務
1986年～　千葉県八千代市（現在地）で診療
2004年～　医療法人社団清泉会杉山歯科医院理事長
2011~2023年　日本ヘルスケア歯科学会代表

Ai Hasumi

2002年3月　北原学院歯科衛生専門学校卒業
2002年9月　医療法人社団清泉会杉山歯科医院勤務
2008年　日本ヘルスケア歯科学会認定衛生士取得
2017年　産休・育休
2019年　復職（パート）

Miki Ishihara

1989年　愛知学院歯科衛生士専門学校卒業
　　二村歯科医院勤務
1991年　愛知県海部郡　月星歯科クリニック勤務
1993年　CEセミナー講師（ドクターコース）
1997年　月星歯科クリニック退社
　　フリーランスとなる
2006年　名古屋歯科衛生士専門学校非常勤講師
　　（現　名古屋歯科医師会附属歯科衛生士専門学校）
2016年　株式会社　COCO　DentMedical　設立

現在の活動は数件の医院と契約し新人指導、システム作り、予防処置に携わりながら、各講演も行っている

Yayoi Ito

1994年愛知県立歯科衛生専門学校卒業、同年愛知県海部郡月星歯科クリニック勤務。現在、COCO　DentMedicalに所属し、月星歯科クリニックで勤務する傍ら数件の歯科医院で歯科衛生士教育を行っている

Tomoko Sugiyama

2007年3月　ナゴノ歯科医療専門学校卒業
2007年4月～　医療法人　月星歯科クリニック勤務
2012年～　CEセミナー　DHコースのサポート
2017年～　COCO Dentmedical 株式会社に入社

PROGRAM SCHEDULE

Friday July 12, 2024

Hitotsubashi Hall

Main Hall
* Japanese Translation Provided

Room B

9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00

Opening Remarks 12:50-13:00

Domenico Ricucci
The pulp degeneration process consequent to bacterial challenge. Localization and morphology of endodontic biofilms
13:00-16:00

Mitsuhiro Tsukiboshi
Life long journey with Transplantation of teeth
16:30-18:30

[IADT BOARD MEETING]
9:00-17:00

Saturday July 13, 2024

Hitotsubashi Hall

Main Hall
*Japanese Translation Provided

[Congress Ceremony]
10:00-10:20

[Memorial Lecture Session]
Lars Andersson
Tooth ankylosis after replantation - how to understand and manage this complication
10:30-11:20

Mitsuhiro Tsukiboshi
What I learned from Dr. Jens Andreasen
11:30-12:20

[Director Lecture]
Anne O'Connell
Trauma and Toddlers-dental injuries in young children
14:00-14:50

Fabricio Teixeria
Vital Pulp Therapy in Trauma: No more excuses in the Bioceramic Era
15:00-15:50

William (Bill) Kahler
Calcium hydroxide controversies and applications in dental traumatology
16:10-17:00

[Tokyo Bus Tour]
17:30 - 20:30

Room A
* English Translation Provided

[Congress Ceremony] (Satellite)
10:00-10:20

Teppei Tsukiyama
Maximizing Tissue Preservation for Periodontally Compromised Teeth in the Esthetic Zone
10:30-11:20

Takafumi Ohtani
Clinical Advantages of Ceramic Overlay
11:30-12:20

[Lunch Break]

[Morita]
Taisuke Tsukiboshi
Precise examination, diagnosis and treatment plan for traumatised teeth and transplantation. Are you really going to give up saving the traumatized tooth? It is "Mottainai!"
14:00-15:50
*in Japanese

Katsu Takahashi
先天性無歯症患者の欠如歯を再生する新規抗体医薬品の開発
16:10-17:00
*in Japanese

Room B

[Satellite]
Broadcasting Room A's Program (Japanese)
10:30 - 12:30

[Oral Presentation]
Scientific Research
15:00-17:00

TKP Garden City PREMIUM Jimbocho

Ballroom

[Satellite]
Broadcasting Main Hall's Program (English)
10:00 - 12:30

[Lunch & Learn]
45-min. Presentation+10-min. Q&A
12:30 - 14:00
Nitesh Tewari/Cesar de Gregorio Nestor Tzimpoulas/Shinya Iida

[Satellite]
Broadcasting Main Hall's Program (English)
14:00 - 17:00

Garden

[Satellite]
Broadcasting Main Hall's Program (Japanese)
10:30 - 12:30

[Lunch & Learn]
45-min. Presentation+10-min. Q&A
12:30 - 14:00
Peter Duckmanton/Lumnije Kqiku Takanobu Haruki
(in Japanese)

[Satellite]
Broadcasting Main Hall's Program (Japanese)
14:00 - 17:00

Timber

[Lunch & Learn]
45-min. Presentation+10-min. Q&A
12:30 - 14:00
Hidetoshi Aimiya Yoshinobu Maeda

Lush

[Lunch & Learn]
45-min. Presentation+10-min. Q&A
12:30 - 14:00
Takeshi Tokura Noriaki Yoshida
(in Japanese)

Forest

[Lunch & Learn]
45-min. Presentation+10-min. Q&A
12:30 - 14:00
Shogo Ando
(in Japanese)
Kazuhiro Fukunishi
(in Japanese)

KKR Hotel

TOKI

IADT Fellowship Committee Breakfast
8:00-9:15

Lunch and Learn Topic List

Speaker Name	Language	Topics
Nitesh Tewari	English	Saving the unsalvageable: non surgical management of traumatized teeth with guarded prognosis in adolescents
Cesar de Gregorio	English	Luxations on permanent dentition. Emergency care, treatment and prognosis.
Nestor Tzimpoulas	English	Post-traumatic Resorptions:Differential Diagnosis & Management
Shinya Iida	English	Tips for Successful Anterior Composite Resin Restorations
Peter Duckmanton	English	The origin of Enterococcus Faecalis in the root canal system: a literature review
Lumnije Kqiku	English	Emergency care of dental trauma
Takanobu Haruki	Japanese	小児の口腔外傷 -特に乳歯の陥入について-
Hidetoshi Aimiya	English	The Advantages and Limitations of Digital Solutions in Restorative Treatment of Traumatized Teeth with Long-Term Post-Trauma Complications
Yoshinobu Maeda	English	Though you can't stop using this mouthguard,you still have to know how and when to use it
Takeshi Tokura	English	Sequelae in Permanent Incisors following the Traumatic Injury of their Predecessors
Noriaki Yoshida	Japanese	外傷歯の治療法 基礎編
Shogo Ando	Japanese	Exploring the Frontier of Digital Innovations in Managing Traumatized Teeth in Aesthetic Zone
Kazuhiro Fukunishi	Japanese	Criteria for choosing surgical endodontic treatment

Sunday July 14, 2024

Hitotsubashi Hall

Main Hall
*Translation Provided

Domenico Ricucci
Calcific changes in the pulp tissue following caries and trauma
10:00-10:50

Nitesh Tewari
Evidence based dental traumatology: where are we now?
11:00-11:50

[Implant Session]
Liran Levin
In the Dental Implant Era - Why we bother saving teeth?
13:30-14:20

Yoshiro Iida
Management of dental trauma and implant treatment utilizing partial extraction therapy
14:30-15:20
*in Japanese

Tomohiro Ishikawa
Esthetic implant therapy in traumatic hard and soft tissue defect sites
15:50-16:40

Zafer Cehreli
Conventional and Simplified composite build-up techniques for crown-fractured young permanent incisors
16:50-17:40

Room A
*Translation Provided

Nestor Tzimpoulas
When and how to use Bioceramic materials after Traumatic Dental injuries
10:00-10:50

César de Gregorio
Management of complications in Dental Traumatology
11:00-11:50

[Lunch Break]

Hideyuki Izumi
接着ブリッジの科学と臨床
～保存不可能な外傷歯の補綴治療～
13:30-14:20
*in Japanese

Tomonari Hirai
自家歯牙移植の手技と勘所
14:30-15:20
*in Japanese

Hiroyuki Saida
自家歯牙移植による歯周組織の再生
15:50-16:40
*in Japanese

Yosuke Tsukiboshi
Digital application in autotransplantation: How to make a 3D replica with free softwares
16:50-17:40
*in Japanese

1F Poster I / 3F Lobby Poster II

[Poster Presentation]
Case Competition:
1F Poster I

Scientific research:
3F Lobby Poster II
12:00-13:30

Room B

[Oral Presentation]
Scentific research
10:00-14:15

[Satellite]
Broadcasting
Room A's Program
(Japanese)
14:30-17:40

Gakushi Kaikan

Room 202

[Satellite]
Broadcasting
Main Hall's Program
(Japanese)
10:00-12:00

[Lunch Break]

[Satellite]
Broadcasting
Room A's Program
(Japanese)
13:30-15:00

[Gala Party]
*Venue: Gakushi Kaikan 201
18:00-21:00

Room 203
*in Japanese only

[Dental Hygienist Session]
Dr. Seiichi Sugiyama & DH Ai Hasumi
子どもの未来を守るカリエスマネジメント
10:00-11:30

DH Tomoko Sugiyama
妊産婦によりそって
DHができること
11:30-12:00

[Lunch&Learn For DH]

[Dental Hygienist Session]
DH Yayoi Ito
長期的な関わりから考える歯科衛生士の役割とは
13:30-14:20

[Dental Hygienist Session]
DH Miki Ishihara
歯周治療成功に導くポイント
14:30-15:20

[Dental Hygienist Session]
Dr.Tetsuya Mizukami, DH Yuko Shimoda
チームでレベルアップ！歯周治療
(colaboration session)
15:30-17:00

KKR Hotel

TOKI

[Dental Traumatology Journal]
Editorial Board Meeting
8:00-9:15

Monday July 15, 2024

Hitotsubashi Hall

Main Hall
* Japanese Translation Provided

Michał Sobczak
Outcomes of Apexification and Regenerative Endodontics in traumatized teeth
10:00-10:50

Georgios Tsilingaridis
Intrusions and root fractures - where are we today?
11:00-11:50

Awards ceremony and concluding remarks
Liran Levin, IADT president and Mitsuhiro Tsukiboshi
12:00-13:00

Room A
* Japanese Translation Provided

Yuli Berlin-Broner
Gen Y dental trauma education for dental students: real-time, interactive, and cutting-edge
10:00-10:50

Geertje Van Gorp
The interdisciplinary approach of complex traumatic dental injuries in the young permanent dentition
11:00-11:50

9:00
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18:00
19:00

LUNCH & LEARN SESSIONS

Saturday, July 13, 2024 from 12:30 - 14:00

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.

Speaker Name	Language	Topics
Nitesh Tewari	English	Saving the unsalvageable: non surgical management of traumatized teeth with guarded prognosis in adolescents
Cesar de Gregorio	English	Luxations on permanent dentition. Emergency care, treatment and prognosis.
Nestor Tzimpoulas	English	Post-traumatic Resorptions:Differential Diagnosis & Management
Shinya Iida	English	Tips for Successful Anterior Composite Resin Restorations
Peter Duckmanton	English	The origin of Enterococcus Faecalis in the root canal system: a literature review
Lumnije Kqiku	English	Emergency care of dental trauma
Takanobu Haruki	Japanese	小児の口腔外傷　- 特に乳歯の陥入について -
Hidetoshi Aimiya	English	The Advantages and Limitations of Digital Solutions in Restorative Treatment of Traumatized Teeth with Long-Term Post-Trauma Complications
Yoshinobu Maeda	English	Though you can't stop using this mouthguard,you still have to know how and when to use it
Takeshi Tokura	English	Sequelae in Permanent Incisors following the Traumatic Injury of their Predecessors
Noriaki Yoshida	Japanese	外傷歯の治療法　基礎編
Shogo Ando	Japanese	Exploring the Frontier of Digital Innovations in Managing Traumatized Teeth in Aesthetic Zone
Kazuhiro Fukunishi	Japanese	Criteria for choosing surgical endodontic treatment

ORAL PRESENTATION (SCIENTIFIC RESEARCH) LISTING

Date	Presentation time	Presenter	Title
Saturday, July 13	15:00-15:15	Salem Katayoun	Effect of Topical Application of Cell Culture Media on Root Resorption of Replanted Rat Incisors
	15:15-15:30	Hong-Keun HYUN	Study on the mechanical and optical properties of newly developed composites for dental splints
	15:30-15:45	Fatma Rashed	Dental pulp tissue-like regeneration using amelogenin in teeth with opened apex and apical periodontitis.
	15:45-16:00	Thikrayat Bani-Hani	Developing an Artificial Intelligence Model for Application in Dental Traumatology
	16:00-16:15	Angela Quispe-Salcedo	In vivo assessment of synthetic toll-like receptor 9 ligand molecules for the treatment of the afflicted dental pulp following tooth replantation in mice
	16:15-16:30	Carlos Soares	Mouthguard and dental trauma – Biomechanics and innovation aspects of use digital workflow
Sunday, July 14	10:00-10:15	Haojie Yu	Prediction model for the prognosis of luxated teeth
	10:15-10:30	Singh Tarun	Clinical Management of Early and Delayed Replantation of Avulsed Maxillary Incisors: A Series of Clinical Cases
	10:30-10:45	Sheikhnezami Mahshid	Long-Term Outcome of Horizontal Root Fractures in Permanent Teeth: A Retrospective Cohort Study
	10:45-11:00	Simran Olikh	Referral pattern for management of traumatic dental injuries to Paediatric Dentistry team: A clinical services audit.
	11:00-11:15	Alina Wikstrom	Outcomes of apexification in immature traumatized necrotic teeth and risk factors for premature tooth loss: A longitudinal study with up to 20 years of follow up
	11:15-11:30	Didem Ozdas	What happens if dental assistants take seminar about dental trauma?
	11:30-11:45	Lea Budak	Luxation injury risk factors in the Croatian pediatric population – a retrospective study
	11:45-12:00	Oguzhan Karayel	THE CHARACTERISATION OF PERMANENT TOOTH SEQUELAE/DEFECT TYPE IN INTRUSION-TYPE TRAUMAS EXPERIENCED IN THE PRIMARY DENTITION
	12:00-12:15	Garima Jhunjhunwala	Understanding extra-oral dry time in relation to tooth avulsion – An exploratory review
	12:15-12:30	Isabel Olegario	Education in Dental Traumatology: the development of a self-paced online learning tool for undergraduate dental students including gamification features
	12:30-12:45	Ahsen Akpinar	FOLLOW-UP OF DENTOALVEOLAR DEVELOPMENT OF CHILDREN AFTER PRIMARY TOOTH AVULSION AND POSTTRAUMATIC ATTITUDE OF PARENTS
	12:45-13:00	Mohammed Al-Naser	Effect of Educational Methods on Dental Trauma Knowledge Among School Teachers: A Systematic Review
	13:00-13:15	Annapurny Venkiteswaran	Challenges In Managing Dental Trauma Cases In Non-Hospital Based Clinical Settings: A Qualitative Study
	13:15-13:30	Edward Barrett	TEMPORAL TRENDS AND PRESENTING CHARACTERISTICS OF SEVERE PERMANENT TOOTH INJURIES AT A PEDIATRIC HOSPITAL OVER A 5-YEAR PERIOD
	13:30-13:45	Mariam Alkheder	Risk Factors for Traumatic Dental Injuries Among Children and Adolescents
	13:45-14:00	Amir Azarpazhooh	Treatment Outcomes in Regenerative Endodontics: What Do We Measure and How Good Are We?
	14:00-14:15	Aysenur Cetin	EVALUATION OF TRAUMATIC DENTAL INJURIES WITH A NEW STANDARDIZED INDEX, THE EDEN BAYSAL DENTAL TRAUMA INDEX

POSTER LISTING

Poster Board Number	Category	Name	Poster Title
CC-001	Case Competition	Sun Hantang	Conservative management of a mid-root horizontal fracture in anterior tooth
CC-002	Case Competition	Katsuhiro Asaka	A case of intentional reimplantation of a tooth with vertical root fracture due to trauma
CC-003	Case Competition	Alzaabi Badriya	Managing Crown-Root Fracture in Young Patients: A Two-Case Report
CC-004	Case Competition	Mahmud Ayla	Repositioning and retaining significantly displaced teeth. A case report demonstrating how multidisciplinary management can optimise outcomes.
CC-005	Case Competition	Alqudaimi Shatah	CASE REPORT OF AVULSION INCISOR REPLANTED AFTER 2 HOURS
CC-006	Case Competition	Faridoun Anfal	Minimally Invasive Management of Complicated Crown Fractures in Paediatric Patients: A Case Series Utilising Bioceramic Putty Partial Pulpotomy and Coronal Restorative Techniques
CC-007	Case Competition	Marandi Dagmar	Impacted canines in autotransplantation
CC-008	Case Competition	Almohammed Fatemah	An Unusual Sequela of a Lateral Luxation Injury – A Case Report
CC-009	Case Competition	Holscher Christian	Advanced Revitalization Protocol Utilizing Laser, Cold Atmospheric Plasma, and PRF for Rescuing an Immature Necrotic Incisor with PAI Score 5: A Three-Year Controlled Case Report
CC-010	Case Competition	Ko Lynn	Dental Luxation Injury Management in a Blind Football Player: A Case Report
CC-011	Case Competition	Xun Chen	Conservative Management of Complicated Crown Fracture: An Immediate Esthetic Rehabilitation
CC-012	Case Competition	Yujie Chin	Luxation Injuries of Immature Permanent Incisors in an Uncooperative Child: Management and Outcome
CC-013	Case Competition	Jana Vasakova	Regenerative endodontic treatment complicated with periodontal involvement in trauma management
CC-014	Case Competition	Chun-Chieh Kao	Pulp Revascularization of an Autotransplantated Third Molar with Computer-aided Rapid Prototyping Model and Digital Technology
CC-015	Case Competition	Yi-Chang Chang	Is it possible to print vertical root fracture lines using a Micro–Computed Tomography System and 3-dimensional Printing Technology?
CC-016	Case Competition	Yessenia Valverdeingersoll	Successful vital pulp therapy on a lower mandibular incisor with complicated crown fracture caused while eating with a fork: a case report with 26 months follow up.
CC-017	Case Competition	Leezallini Selvaraj	Replantation of two permanent avulsed teeth and management of soft tissue injury in an adolescent male patient.
CC-018	Case Competition	Itsuki Hayashi	A case of long-term preservation of a mandibular anterior tooth with root resorption 5 years after mandibular fracture
CC-019	Case Competition	Nurmimie Abdullah	ROOT SUBMERGENCE: A SECOND CHANCE?
CC-020	Case Competition	Nabil Ouatik	Autotransplantation of a premolar with two roots to replace a central incisor using a Co-Cr 3D-printed replica
CC-021	Case Competition	Shunsuke Fukuba	Apical tooth replantation with surgical root intrusion technique for the treatment of hopeless teeth with severe endo-periodontal lesions, pathologic tooth migration, and gingival recession.
CC-022	Case Competition	Aman Kumar	Delayed reimplantation of an avulsed tooth and its clinical significance: a twenty-four-month follow-up report
CC-023	Case Competition	Greta Lodiene	A severe external inflammatory root resorption after tooth avulsion: a case report of the multidisciplinary treatment with the 10-year follow-up
CC-024	Case Competition	Rana Yalcinkaya	MULTIDISCIPLINARY TREATMENT OF A DELAYED COMPLICATED CROWN FRACTURE OF IMMATURE PERMANENT CENTRAL INCISOR AND ANTERIOR CROSSBITE: A CASE REPORT
CC-025	Case Competition	Hiroshi Teraoka	An effective combination device for Autotransplantation -5 years of observation after the operation-
CC-026	Case Competition	Masamitsu Tsumori	Intellectually disabled girl's luxated incisor stabilized by a vacuum-formed retainer and 3 other cases about luxation or avulsion of ordinary patients: Clinical reports
CC-027	Case Competition	Daisuke Shiraishi	A case of immediate tooth transplantation combined with FGF2 after forming a receptive socket using acrylic replica tooth for a missing molar tooth in an adult male.
CC-028	Case Competition	Kuroda Toshiki	A case of a vital and discolored tooth with pulp revasclarization occurred after trauma, which achieved a color harmony with the combined bleaching.
CC-029	Case Competition	Rajeevkumar Singh	Traumatized Tooth- Wired and Plugged!
CC-030	Case Competition	Taiji Nagahashi	Comparison of pulp cavity of maxillary right and left central incisors after dental trauma treatment.
CC-031	Case Competition	Shaimaa Alsayrafy	Management of an intrusive dental injury following inflammatory related root resorption – A Case Report
CC-032	Case Competition	Sulin Quak	Use of removable appliance for orthodontic repositioning of severely intruded permanent incisors with complicated crown fractures in a young patient in mixed dentition
CC-033	Case Competition	Eliska Dokoupilova	Multidisciplinary Approach in Management of Intrusion in Immature Maxillary Incisors
CC-034	Case Competition	Abdulllah Alenezi	Management of Complicated Crown-Root Fracture in a Vital Young Permanent Incisor using Glassfibre Ribbon as a Reinforcement
CC-035	Case Competition	Krisadi Phannarus	Orthodontic Management in Delayed Presentation of Laterally Luxated Tooth: A Case Report
CC-036	Case Competition	Shuji Imura	Ingenuity to minimize invasion by using a tooth replica at the time of transplantation.

Poster Board Number	Category	Name	Poster Title
CC-037	Case Competition	**CANCELLED**	
CC-038	Case Competition	Leszek Bury	Autotransplantation of matured teeth – impact on improving bone conditions in the recipient site: Case descriptions
CC-039	Case Competition	Abhisek Bhattacharjee	Banged-up Incisor? Just Reset!!!
CC-040	Case Competition	Ashmeetkaur Oberoi	Peeping Pulp Polyp: Story of a Vitality Quest...
CC-041	Case Competition	Peicheng Yeh	Multidisciplinary approach for the treatment of complicated crown-root fractures in a young patient: A case report
CC-042	Case Competition	Hidetaka Ishizaki	The vitality and potential of dental pulp in a traumatized permanent maxillary incisor
CC-043	Case Competition	Noor Othman	Enamel infraction: more than meets the eye.
CC-044	Case Competition	Hung-Ming Chang	Prosthetic-driven Autotransplantation with the Assistance of Medical Image Processing Software and a Real-time Navigation System: A Case Report
CC-045	Case Competition	Yi-Yin Lai	Regenerative endodontic procedures on an avulsed immature permanent incisor with delayed replantation: Five-year follow-up
CC-046	Case Competition	Yusuke Matsuzawa	Autotransplantation for malpositioned bilateral upper canines
CC-047	Case Competition	Ruba Mustafa	Management of lateral luxated immature permanent incisor
CC-048	Case Competition	Magali Hernandez	A rare complication of primary teeth injury: partial arrest root formation of permanente tooth, surgical approach, and 5 years follow-up.
CC-049	Case Competition	Satish Alapati	Pulp Revascularization in Permanent Immature Incisors: 8-Year Follow-Up of Trauma
CC-050	Case Competition	Katrina Andrejeva	Development of apical resorption and recurrent lesion after orthodontic treatment in maxillary lateral incisor with previously successful regenerative endodontic treatment (RET): long-term follow-up, case report.
CC-051	Case Competition	Kateryna Zhmurko	Elimination of the enamel defect of the 11th tooth affected by hypomineralization with the subsequent attachment of caries (as a result of the trauma of temporary tooth 51), by the Icon system and restoration with a composite without preparation
CC-052	Case Competition	Meghana Magatala	REPEATED DENTAL TRAUMA IN PAEDIATRIC PATIENT WITH INCREASED OVERJET: A CASE REPORT
CC-053	Case Competition	Akira Maeda	Evaluating Outcomes: Tooth autotransplantation with Surgical guides, Specialized Burs and Donor Tooth Replicas Across Five Cases
CC-054	Case Competition	Adel Hamdani	Modern Approach in Dental Autotransplantation: A Pilot Case of Full Guided Surgery and positioning
CC-055	Case Competition	Thibault Perez	Management of Oroantral Communication through Autotransplantation of Maxillary Third Molar
CC-056	Case Competition	Othman Noorfarahain	Turning Setback into Success: A Case Report on Delayed Endo-Perio Lesion Post-Trauma in a Young Patient with 1 Year Follow-Up
CC-057	Case Competition	Rohaida Abdulhalim	Late Management of Dental Trauma with Alveolar Ridge Preservation in an Anxious Child: A Case Report
CC-058	Case Competition	Hessa Albader	Management of multiple complicated dental fractures with delayed presentation in a growing adolescent
CC-059	Case Competition	Sarah Venkataraman	UNEXPECTED HARD AND SOFT TISSUE OUTCOMES IN A PATIENT WITH PERMANENT DENTAL TRAUMA: A CASE REPORT
CC-060	Case Competition	Jihwan Seo	Developmental Disturbances of Permanent Teeth Due to Trauma of Primary Teeth: Case Report
CC-061	Case Competition	Luke Moloney	TRAUMATIC EXPOSURE OF UNERUPTED INCISORS: A CASE REPORT
CC-062	Case Competition	Min-Chia Chen	Digital simulation extends the indications in autotransplantation an impacted wisdom tooth.
CC-063	Case Competition	Nabihah Dziaruddin	Revitalizing Young Smiles: Decoronation and Fiber-Reinforced Composite Bridges in Managing Infraoccluded Tooth
CC-064	Case Competition	Jen-Ti Hsieh	Autotransplantation of teeth with mature apex - is elective root canal mandatory?
CC-065	Case Competition	Natrah Fuad	Dental trauma and its consequences: the delayed management and the advantages of leukocyte- and platelet-rich fibrin (L-PRF)
CC-066	Case Competition	Hiroyuki Saida	Occlusal Reconstruction with Autogenous Tooth Transplantation of Non-Functional Multi-Rooted Wisdom Tooth Simultaneous Sinus Lift Procedure; A Case Report with 19-year Follow-Up
CC-067	Case Competition	Yoshiaki Sato	Tooth autotransplantation and subsequent orthodontic treatment is effective for bone regeneration
CC-068	Case Competition	Yoshiyuki Iwabuchi	Re-establishment of Occlusal Support with Fixed Prosthetic Using Multiple Autogenous Transplantation : Consideration of Width of Donor Tooth and Alveolar Crest
CC-069	Case Competition	Carly Dixon	Crash, Bang, Covid : Long-term management of severe dental trauma.
CC-070	Case Competition	Shivani Singh	"Deciduous teeth : A Beautiful Savior"
CC-071	Case Competition	Marlene Yu	Management of Complex Fractures in Upper Central Incisors
CC-072	Case Competition	Suhae Kim	Use of prefabricated functional appliances(PFA) on a child with subcondylar and parasymphysis fracture: a case report

Poster Board Number	Category	Name	Poster Title
CC-073	Case Competition	Yuichi Yoneda	Management of Traumatic Tooth Injury with Exposed Pulp: A Case Report
CC-074	Case Competition	Sherifa Almukhaizeem	Management and complications of avulsion and extrusion injuries in adolescence undergoing active orthodontic treatment- case report
CC-075	Case Competition	Malgorzata Jamka-Kasprzyk	"Management of horizontal root fracture in the middle third in – clinical cases."
CC-076	Case Competition	Jen-Hao Liu	Management of Immature Maxillary Incisor with Inflammatory Root Resorption Caused by avulsion
CC-077	Case Competition	Satoko Kakino	Six-year follow-up with CBCT and pulpal circulation measured by TLP after horizontal root fracture in a young permanent upper central incisor
CC-078	Case Competition	Takanori Nakamura	Autotransplantation to prevent progression of bilateral molar defects: report of a case.
CC-079	Case Competition	Melissa Khor	Management of permanent central incisors with multiple dental trauma episodes in a young patient
CC-080	Case Competition	Thavamalar Marimuthoo	Autotransplantation with Bone Augmentation in Hypodontia Patient
CC-081	Case Competition	Battsetseg Tseveenjav	Decoronation in upper permanent incisor suffered multiple dental injuries
CC-082	Case Competition	Daiva Sabaliauskiene	Management and Follow-Up of Complicated Crown-Root Fractures with Luxation of Permanent Maxillary Incisors: a case report of the multidisciplinary treatment with the 2-year follow-up
CC-083	Case Competition	Sally Mccarthy	Management of Endodontic Sequelae Associated With Dentofacial Trauma using 3D Surgery Simulation
CC-084	Case Competition	Daryna Tolkachova	Severe periodontal trauma caused by orthodontic elastic bands. A case report with 8-year follow-up.
CC-085	Case Competition	Hussa Albahar	Tooth Fragment Reattachment in Complicated Crown Fracture of Young Permanent Incisors - A Case Series
CC-086	Case Competition	Robyn Crowley	Complex issues in the management of severe intrusions of immature permanent teeth.
CC-087	Case Competition	Muthu Ms	Replantation of Maxillary Primary Incisors with Long-term Follow-up - A Case Series
CC-088	Case Competition	Vijay Kumar	Management of inflammatory root resorption in an intruded tooth: A case with 10 year follow up
SR-089	Scientific Research	Alharbi Mohammed	The Incidence of Devitalization of Vital Teeth Associated with Pathologies of the Jaws Following Surgical Intervention – A Mixed-case Study
SR-090	Scientific Research	Pattama Chailertvanitkul	Effect of mineral trioxide aggregate mixed with Thai propolis extract on matrix metalloproteinase-2 expression in inflamed human dental pulp cells.
SR-091	Scientific Research	Xiaoxian Chen	The outcome of delayed replantation of avulsed permanent teeth
SR-092	Scientific Research	Samah Omar	The novel use of the patient's own natural tooth for prosthetic replacement after tooth loss due to traumatic dental injury.
SR-093	Scientific Research	Sobia Zafar	Evaluation of dental students' knowledge and confidence in paediatric dental trauma management
SR-094	Scientific Research	Qiang Li	Clinical effect of Er: YAG laser assisted direct pulp capping and fragment reattachment in the treatment of permanent anterior teeth with complicated crown fracture
SR-095	Scientific Research	Le-Yin Chen	Vital Pulp Therapy in Fractured Tooth with Irreversible Pulpitis: A Case Report
SR-096	Scientific Research	Karolina Spodzieja	Knowledge about dental trauma management among secondary school students in Poland.
SR-097	Scientific Research	Zhaochen Shan	The observation of apoptotic and oxidative stress level in dental pulp after severe tooth trauma
SR-098	Scientific Research	Noorharliana Zohdi	Management of Perforating External Inflammatory Root Resorption following subluxation with crown fractured on matured teeth: A multidisciplinary approach.
SR-099	Scientific Research	Aakriti Saini	Cone-beam computed tomography based descriptive classification and treatment centered protocol for transverse root fracture.
SR-100	Scientific Research	Ajay Logani	A suggested cone-beam computed tomography based protocol for reporting transverse root fracture.
SR-101	Scientific Research	Mary Claire Garcia	In Vitro Root Canal Therapy for Avulsed Teeth: A 6-Month Follow-up
SR-102	Scientific Research	Lisu Sung	Prognosis of Fragment Reattachment in Anterior Crown Fractures: A Retrospective Study
SR-103	Scientific Research	Giselle Dmello	Traumatic dental injury presentations at a tertiary hospital in metropolitan Melbourne.
SR-104	Scientific Research	Yu-Hsiang Lin	Associative factors of Traffic Dental Injuries using National datasets in Taiwan
SR-105	Scientific Research	Aysha Alsaif	Managing Tooth Avulsion in an Adolescent: Importance of Interdisciplinary Planning and Careful Monitoring
SR-106	Scientific Research	Nicolas Obtel	Periodontal modeling and conditioning to avoid fractured teeth extractions: strategies of temporization and prosthetic/aesthetic rehabilitation with BOPT in a clinical case scenario
SR-107	Scientific Research	Sharifah Wafa	Renewing Confidence: Autotransplantation in Pediatric Dentistry - A Case Report
SR-108	Scientific Research	Paola Chiaramonte	Dental Helmet : a new cheap technique to get an effective Mouth Guard
SR-109	Scientific Research	Matthias Holly	Therapy of a traumatised central incisor 16 years after unfinished initial treatment

Poster Board Number	Category	Name	Poster Title
SR-110	Scientific Research	Luka Simunovic	Assessing prevalence and response to hard dental tissue trauma among children and adolescents
SR-111	Scientific Research	Lara Vranic	Dental avulsion awareness among final year students: A cross-country study
SR-112	Scientific Research	Laurence Lupi	TEACHING PRACTICES IN DENTAL TRAUMATOLOGY IN FRENCH UNIVERSITIES
SR-113	Scientific Research	Alp Akca	Treatment of Uncomplicated Enamel-Dentin Fracture using Injection Moulding Technique: A Case Report
SR-114	Scientific Research	Jessica Cooper	To brace or not to brace? The benefits of early orthodontic alignment following traumatic dental injuries
SR-115	Scientific Research	Po-Jan Kuo	Digital-assisted tooth autotransplantation for interdisciplinary rehabilitation of the esthetic zone
SR-116	Scientific Research	Gen Tanabe	Two cases of custom-made sports mouthguards for the prevention of dental trauma in athletes with cleft lip and palate
SR-117	Scientific Research	Joon-Young Koo	The Analysis of the Influence of COVID-19 Pandemic and Endemic on Traumatic Dental Injuries
SR-118	Scientific Research	Sumaiyya Saleem	Assessment of Sports Instructors' Awareness and Perception of Mouthguard Usage in the South Chennai Region
SR-119	Scientific Research	Sidhartha Sharma	Evaluating the learning curve for dynamic navigation procedure during endodontic management of traumatized permanent maxillary anterior teeth with pulp canal calcification: a prospective study.
SR-120	Scientific Research	Jungmin Eum	Management of Complicated Crown-root Fracture with Intrusive Luxation of Maxillary Incisors : 5-Year Follow-up
SR-121	Scientific Research	Yuri Jeong	Change in Oral and Maxillofacial Injuries of Pediatric Patients in the COVID-19 Pandemic: A Single Center Study
SR-122	Scientific Research	Dhanraj Kalaivanan	Delayed replantation of an avulsed permanent incisor and endodontic management using bioceramics - A one year follow-up
SR-123	Scientific Research	Ahmad Shaqir	Multidisciplinary Approach in Management of Complicated Crown Root Fracture:A Case Report
SR-124	Scientific Research	Othman Zuhir	Total Biodentine Obturation in Managing an Immature Permanent Incisor with External Inflammatory Root Resorption Secondary to Avulsion
SR-125	Scientific Research	Siobhan Barry	A Novel Dental Trauma Index - Investigating the Epidemiology of Traumatic Dental Hard Tissue Injuries
SR-126	Scientific Research	Lama Awawdeh	The Outcome of Revascularization Treatment for Necrotic Immature Permanent Teeth: 2D and 3D Radiographic Evaluation Study
SR-127	Scientific Research	Honsingjames Lai	Understanding Failures of RET and exploring management options
SR-128	Scientific Research	Mugilan Ravi	Development and preliminary validation of Oral Re-injury Anxiety Scale for boxers aged 10 to 16 years
SR-129	Scientific Research	Priscilla Soares	Dental undergraduate students' ability in the diagnosis of root fractures: Comparative analysis of different imaging methods
SR-130	Scientific Research	Vijay Kumar	Low intensity pulsed ultrasound (LIPUS) as a therapeutic adjunct to enhance periodontal healing after luxation dental injury

KEYNOTE ABSTRACTS

The pulp degeneration process consequent to bacterial challenge. Localization and morphology of endodontic biofilms

Domenico,Ricucci[1]
[1]Private practice, Cetraro

After a brief overview of tissue response to shallow, medium and deep caries, the histological events that can be observed when pulp is penetrated by bacteria will be illustrated. Necrosis and bacteria are initially confined to the pulp chamber, but soon the pulp degeneration process extends beyond root canal orifices and moves slowly in an apical direction, with or without clinical symptoms. In histologic sections, bacteria are often observed to form complex structures adhering to the root canal walls. These structures are known as “biofilms” and. The biofilm community lifestyle provides microorganisms with a series of advantages and skills that are not observed for individual cells living in a free-floating (planktonic) state. Bacterial biofilms can be observed in lateral canals and apical ramifications, and only their complete elimination will lead to endodontic success. In cases with longstanding infection, bacteria have the capacity to trespass the limits of the root canal system and form biofilms on the external apical surface. Following deposition of calcium salts, these biofilms can become calcified. In addition, some bacterial species, namely Actinomyces species, may form cohesive colonies in the body of the apical periodontitis lesion. The presence of these extraradicular bacteria and their possible role in determining root canal treatment failures will be discussed.

Life-long journey with autotransplantation of teeth

Mitsuhiro,Tsukiboshi[1,2]
[1]Chair of Tsukiboshi Dental Clinic
[2]Past president of IADT

Autotransplantation of teeth has been performed for decades, but its popularity has varied over the years due to unpredictable results. However, with recent advancements in technology and better biological understanding, ATT has become more predictable. Yet, many clinicians are still not confident about this technique, in part due to the lack of studies on the long-term outcomes of these cases.
I have performed more than 1,000 ATT since 1984 in general private practice. Almost all of the cases were carefully recorded with photographs and radiographs in a standardized manner and many were followed long-term. In my presentation, I would like to discuss the advantages of ATT with sharing the life-long experience of mine.

Tooth ankylosis after replantation - how to understand and manage this complication

Lars,Andersson[1]
[1]Oral and Maxillofacial Surgery, Malmö University, Sweden

Root resorption is often seen after replantation of avulsed teeth. While inflammatory root resorption today can be prevented or treated, ankylosis is the most serious complication for the replanted tooth resulting in progressive replacement resorption of the root by bone causing loss of the tooth. Moreover, inhibition of growth and development of the alveolar process is also seen in growing patients following ankylosis. Early diagnosis of ankylosis is important for accurate treatment planning. The lecture will give an overview aiming at understanding the development, diagnosis, rate and progression, infraposition and management of ankylosis based on in vivo- and clinical studies and an overview of the literature. An overview of various, less successful, methods to manage ankylosis will be given and the methods of optimal management of ankylosis today, will be presented. The importance of early diagnosis and the recent shift in paradigm from “save the tooth” to “preserve the bone” will be emphasized.

What I learned from Jens Ove Andreasen

Mitsuhiro,Tsukiboshi[1,2]
[1]Chair of Tsukiboshi Dental Clinic
[2]Past president of IADT

Dental trauma is an acute disease involving the hard tissues, the pulp, and or the periodontium, and is more frequently seen in young people. Since infection is seldom associated with traumatized teeth, treatment options can be conservative. In other words, in dental trauma, pulpotomy is preferred over pulpectomy, simple composite restorations over complex prosthetics, and replantation over extraction. The concept of “minimal intervention” should be upheld when treating traumatized teeth. In my presentation, I will talk what I learned from Jens Ove Andreasen on dental trauma.

Trauma and Toddlers- dental injuries in young children

Anne,O'Connell[1,2]
[1]School of Dental Science, Trinity College Dublin IRELAND
[2]Dublin Dental University Hospital

Any traumatic dental injury in a young child appears catastrophic to the parents. Management can be complex, even under ideal circumstances and important decisions are required in both emergency and long-term care. The dental team has an important role in reducing anxiety of child/parents using a calm empathetic approach to establish rapport and including parents in all decisions.The dentist needs to be especially prepared to deal with an emergency situation involving oral injury in the primary dentition. The IADT guidelines 2020 highlights new changes on the emergency management of injuries in the primary dentition. Behavioural issues may interfere with ideal management and critical decisions must be taken on behalf of the child. Parents must feel included and good communication is the first goal to set priorities and expectations following injury. The long term implications following injury may differ from child to child and parents should be informed of possible sequelae and the need for review over time. Current research informs guidance and questions if some dental interventions following injury in primary teeth are necessary. Contemporary guidelines are based on the biological healing response of oral tissues following injury over time.
This talk will discuss IADT guidelines and research data that support clinical decision making following traumatic oral injury in young children.

Vital Pulp Therapy in Trauma: No more excuses in the Bioceramic Era

Fabricio,Teixeira[1]
[1]University of Iowa

Treatment management of the exposed pulp due to traumatic injuries has obeyed traditional techniques and similar approaches over the years. Recently, discussions of treatment successes associated with new materials have been shared with the practioners. Studies testing new calcium silicate-based materials, commonly called bioceramics, have been widely spread, reporting enhanced biocompatibility and bioactivity. Although most of these materials have
superior physical and chemical properties, their differences may not impact the overall decision making evidence-based process. The presentation will review the applications of common calcium silicate-based types of cement, including Mineral trioxide aggregate (MTA) and Biodentine, in treating pulp exposures or undeveloped teeth with pulpal necrosis with traumatic injuries as etiological factors. Is the type of material key to success? Do they matter, and in what situations? Different situations like complicated crown fractures, regenerative endodontic procedures (REPs), and apexification will be examined.

Calcium hydroxide controversies and applications in dental traumatology

Bill,Kahler[1,2]
[1]IADT
[2]University of Sydney

Calcium hydroxide has a long history of applications in endodontics and dental traumatology. The material has strong disinfectant and osseo-inductive properties. With regard to dental traumatology, the use of calcium hydroxide has applications in vital pulp therapy of complicated crown fractures, pulp necrosis following trauma, avulsions with extended dry time, apexification, MTA barrier techniques and regenerative endodontics. However, the use of calcium hydroxide in apexification has become controversial. Cvek identified a high incidence of transverse root fractures for immature teeth treated with long-term calcium hydroxide dressings. In vitro studies have reported calcium hydroxide has decreased the fracture strength of root dentine over time. However, this finding is also controversial with inconsistent and conflicting observations reported. Calcium hydroxide has been used for 50 years and now some authors and organizations advocate for the use of MTA barrier techniques rather than calcium hydroxide. The purpose of this presentation is to discuss the science around calcium hydroxide, its use of and concerns with calcium hydroxide in dental traumatology.

Maximizing Tissue Preservation for Periodontally Compromised Teeth in the Esthetic Zone

Teppei,Tsukiyama[1,2]
[1]Tsukiyama Dental Specialist Center
[2]Perio Health Institute Japan

Treatment planning considers overall dental facial esthetics, and we often evaluate upper lip position, gingival exposure, and anatomical tooth form during the dynamic smiling analysis. When there is severe periodontitis with attachment loss, or excessive hard and soft tissue as with incomplete passive eruption, the treatment planning and execution needs to be elaborated and modified accordingly. In this session, a decision framework is introduced for the determination of a successful treatment plan for the patient with compromised periodontal tissue in esthetic zone and will be demonstrated through several case presentations.

Clinical Advantages of Ceramic Overlay

Takafumi,Otani[1,2,3]
[1]DENTAL OFFICE OTNAI
[2]Osaka University
[3]University Of Washington

Recent advancements in adhesive dentistry have facilitated clinicians to opt for more conservative treatments, thus shifting the standard of restorative care away from traditional full coverage crowns towards approaches that capitalize on adhesive technology. Ceramic overlay is emerging as a noteworthy conservative indirect restorative option, particularly in cases necessitating occlusal coverage. Unlike traditional full coverage restorations, ceramic overlay doesn't inherently rely on retention form concepts in tooth preparation, implying that conservative tooth preparation may contribute to prolonged tooth longevity. Even in prosthetic treatments for endodontically treated teeth, where full coverage crowns were previously deemed appropriate, a more conservative approach is feasible through the application of ceramic overlays. This technique is also applicable to transplanted teeth following endodontic treatment. This lecture will delve into the fundamental principles of adhesion and elaborate on the evidence and clinical methodologies of adhesive restorative treatment utilizing ceramic overlays, all from a clinician's perspective.

Precise examination, diagnosis and treatment plan for traumatised teeth and transplantation. Are you really going to give up saving the traumatized tooth? It is “Mottainai!”

Taisuke,Tsukiboshi[1]
[1]Private Practice, Nagoya

Embracing the "Mottainai" spirit, which values minimizing waste and maximizing resource use, our dental care approach focuses on preserving traumatized teeth rather than opting for immediate implants. Recognizing implants as a non-eternal solution, we prioritize conservative treatments to save natural teeth whenever feasible.
Our process begins with a precise diagnosis using J. Morita’s F17, which provides clear and precise images for thorough assessment of dental trauma. This detailed evaluation informs individualized treatment plans tailored to each patient's needs. By carefully examining root fractures, bone integrity, and surrounding structures, we can develop effective strategies to support tooth healing and functionality.
Treatment plans may include endodontic therapy, splinting, periodontal care, and advanced tooth transplantation techniques. These methods aim to stabilize and rehabilitate injured teeth, offering a viable alternative to extraction and implants.
By focusing on tooth preservation, our practice enhances patient outcomes and aligns with sustainable dental practices, reflecting the Mottainai ethos. This approach respects the intrinsic value of each tooth, ensuring implant treatments are reserved as a last resort.

先天性無歯症患者の欠如歯を再生する新規抗体医薬品の開発

Katsu,Takahashi[1]
[1]Kitano Hospital Tazuke Kofukai Medical Research Institute

先天性無歯症は、通常６本以上の歯の欠如を認める症例が遺伝性とされ、その発症頻度は全人口の0.1%と報告されている。我々は、USAG-1タンパク（BMP / Wntのアンタゴニスト）の遺伝子欠損マウスにおいて、過剰歯を形成することを見出し、１種類のタンパク分子により歯の数を増やすことができることを明らかにした。また、各種先天性無歯症モデルマウスと過剰歯モデルマウスのUSAG-1遺伝子欠損マウスの交配により、歯の形成が回復することを見出した。研究成果活用事業として2020年5月にトレジェムバイオファーマ株式会社を設立した。in vitro/in vivo活性、予備毒性試験より、ヒト抗USAG-1抗体の最終開発候補物TRG035を決定した。PMDA RS戦略相談対面助言にて非臨床試験の項目を確定した。トレジェム社、AMEDとの産官学連携を積極的推進することで、医師主導治験をすすめて行く予定としている。

Calcific changes in the pulp tissue following caries and trauma

Domenico,Ricucci[1]
[1]Private practice, Cetraro

Several types of calcification can be observed within the pulp tissue. In response to the carious attack, the pulp mounts a reaction, with formation of a mineralized tissue, generally referred to as “tertiary dentin”, in the areas where the tubules involved by caries end to the pulp. This tissue can be more or less tubular, depending on the amount of odontoblasts surviving the insult. In case of pulpal exposures occurring during excavation of deep caries, it is commonly held that, after placement of an appropriate biocompatible capping material, a dentine bridge is formed in a few weeks by new odontoblast-like cells. Other calcifications can be often observed, free in the pulp tissue, or adhering to the dentin walls, in teeth exposed to caries, cracks, periodontal disease, attrition, and even in apparently intact teeth. These are usually called “pulp stones” when located in the pulp chamber, and “diffuse calcifications” when appearing in the root canals. Finally, accelerated hard tissue deposition on the dentin walls of the entire root canal space may occur after dental trauma, autotransplantation, and orthodontic therapy, leading to rapid partial or total obliteration of the root canal space. Within this presentation, the histomorphologic features of all these types of pathologic mineralization taking place in the pulp are illustrated in details. Considerations are made concerning their pathogenesis, and the type of cells that are responsible for their formation.

Evidence-based dental traumatology: where are we now?

Nitesh,Tewari[1]
[1]Pediatric Dentistry, CDER, AIIMS, New Delhi

The inception of the science of dental traumatology dates back to early 1970s with classical works coming from the Scandinavian countries. This field got recognised and gained interest of several clinicians and researchers from different parts of the world in the years to come. At the same time, the clinical dentistry was witnessing a cardinal change in its approach. The anecdotal dictums and opinion based diagnostic and treatment protocols were gradually replaced by the evidence guided approaches and guidelines. This marked the beginning of evidence based medicine and the art of interpreting the quantitative and qualitative results from different studies. Dental Traumatology like all the fields of trauma suffers from an inherent shortcoming where the cases display unique attributes, report at variable periods or patterns, and respond to the treatment modalities differently. Further, there are ethical concerns to plan a research study with traumatized patients by using the principles of research methodology. As a result, studies such as randomized control trials with the least amount of variability and confounding factors used to be rare. The International Association of Dental Traumatology took this aspect into consideration and developed a system of evidence and consensus based guidelines since 2001. Past decade has witnessed a change in dental traumatology as well where systematic reviews based upon the existing research were performed. If we divide the dental traumatology into various domains and subdomains, it becomes apparent that few of the areas such as epidemiology, diagnosis, treatment and prognosis have more and high quality studies while the studies related to such as prevention and research methods are scarce. This lecture aims to provide an overview of where dental traumatology stands in terms of levels of evidence in different domains and what are the primary concerns that need to be addressed in future.

In the Dental Implant Era - Why do we bother saving teeth?

Liran,Levin[1,2]
[1]President of the IADT
[2]University of Alberta, Canada

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 re-evaluation 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:
• To understand the prognostic systems for teeth and implants.
• To explore treatment alternatives for periodontal patients and post-traumatic tooth injuries
• To be able to apply Evidence-Based approach to determine best treatment options

Management of implant therapy in trauma site utilizing partial extraction therapy and tooth transplantation.

Yoshiro,Iida[1]
[1]Private Practice, Nagoya, Aichi

The contemporary approach to managing dental trauma involves the integration of implant therapy with partial extraction therapy (PET) and tooth transplantation, aimed at salvaging damaged teeth while preserving alveolar bone integrity. This approach is crucial because implant success in trauma cases is heavily reliant on the condition of the alveolar bone, which can be compromised by trauma. Traditional treatments often necessitate complete tooth removal, risking the loss of vital alveolar bone and periodontal ligament, essential for implant stability and aesthetics.
This strategy proposes a paradigm shift in dental trauma treatment, highlighting the advantages of PET and tooth transplantation. PET involves retaining a portion of the tooth root during extraction, thereby preserving alveolar bone and periodontal ligament. This not only facilitates immediate or future dental implant placement but also safeguards the alveolar ridge and fosters an optimal environment for implant integration. Additionally, strategically placing the periodontal ligament around implants through PET or tooth transplantation enhances healing and integration, offering a viable alternative to conventional methods.
The presentation will feature case studies elucidating the selection criteria for PET and tooth transplantation in dental trauma, along with the technical nuances of these procedures. These techniques aim to deliver effective, aesthetically pleasing, and functionally superior outcomes, prioritizing the preservation of natural dental structures and enhancing the prognosis of implant therapy in trauma scenarios.
Incorporating PET and tooth transplantation into dental trauma management represents an innovative approach aligned with conservative dentistry and implantology principles. These methods empower dental professionals to enhance treatment outcomes for patients with dental injuries, optimizing the preservation of natural tissues and ensuring the long-term success of implant rehabilitation.

Esthetic and functional reconstruction in patients with anterior dental trauma

Tomohiro,Ishikawa[1]
[1]Ishikawa Dental Clinic

Trauma-induced loss of teeth and surrounding hard and soft tissues results in severe defects in the alveolar crest after healing. Even if an avulsed tooth is reimplanted, replacement resorption can result in infra-occlusion or even future extraction difficulties and bone loss. If the patient is young, he or she must wait until the appropriate age for the placement of implants, forcing the patient to live with a concaved alveolar crest in the anterior teeth for a prolonged period of time. Adhesive bridge is an effective treatment that does not interfere with jawbone growth when indicated, but reconstruction of the alveolar crest is essential to restore esthetics. Hard and soft tissue augmentation should be performed as needed to allow for the possibility of future implant placement. If the patient is eligible for implant placement, treatment should proceed according to the following steps. First, based on the necessary information, such as the patient's smile line and soft tissue exposure during conversation, a feasible goal should be established in full consultation with the patient. Then, the patient's tissue is reconstructed three-dimensionally along the arch, implants are placed precisely, soft tissue is augmented, MGJ is corrected, soft tissue morphology is adjusted with provisional restorations, final restorations are made, and the patient is moved on to maintenance. The loss of anterior teeth and surrounding tissues at once due to trauma is emotionally and physically damaging to the patient. Therefore, we should do our best to treat them. In this lecture, I would like to explain how to restore lost esthetics and function from the viewpoint of peri-implant hard and soft tissue management through case examples.

Conventional and Simplified composite build-up techniques for crown-fractured young permanent incisors

Zafer,Cehreli[1]
[1]Hacettepe University, Ankara, Turkey

Resin composites remain the primary choice for restoring fractured young anterior teeth.
More recently, single-shade composites with enhanced optical properties have become more popular due to their ease of use and satisfactory appearance. However, many fractured teeth exhibit irregular tooth shades, stains, and hypomineralization, necessitating personalized esthetic solutions beyond what single-shade composites can offer independently. This presentation will outline clinical methods for achieving natural-looking resin restorations using both layered and single-shade composites, focusing on shade selection, matching, and micromorphology.

When and how to use Bioceramics after Traumatic Dental Injuries

Nestor,Tzimpoulas[1]
[1]Private practice limited to Endodontics, FIADT

Over the last two decades, advances in endodontic biomaterial science have significantly contributed to the exponential growth of the field of dental traumatology. The bioactive capacity, regenerative potential, and repair capabilities of modern bioceramic materials have revolutionized treatment options for both the emergency management of traumatic dental injuries, such as pulp exposures, and the management of long-term post-traumatic complications, such as root resorptions and infected immature teeth after luxation injuries or tooth fractures.
Currently, new forms and types of bioceramic materials have been suggested for the proper management of traumatized teeth. The aim of this presentation is to provide an overview and classification of bioceramic materials currently used in the field of dental traumatology, based on their different material compositions and clinical applications. We will discuss when and how the proper selection of the type of bioceramic material and appropriate handling can significantly improve the long-term survival of traumatized teeth based on different dental trauma scenarios.

Management of complications in Dental Traumatology

César,de Gregorio[1,2,3]
[1]Board Director, IADT.
[2]SubDirector. Program in Endodontics. King Juan Carlos U.
[3]Affiliate Professor. Dept. of Endodontics. U. of Washington

Management of dental trauma remains a significant clinical challenge affecting health-care providers and patients alike. Patients can present with a wide variety of injuries ranging from crown or root fractures to injuries to the supporting periodontal structure, including luxations and avulsions. This presentation will discuss the newly published guidelines from the IADT (International Association of Dental Traumatology) for diagnosis and treatment of traumatized teeth using different clinical case scenarios based on the available scientific-based data. This presentation will focus as well on their complications and how to minimize sequelae after a traumatic injury, especially in young patients with active growth.
Learning objectives:
-Explain the diagnosis and treatment plan following current guidelines and protocols.
-Develop the most predictable treatment plan for immature teeth to obtain a positive outcome.
-Establish the clinical scenarios to perform a Vital Pulp Therapy Treatment after reviewing its scientific base.

接着ブリッジの科学と臨床～保存不可能な外傷歯の補綴治療～

Hideyuki,Izumi[1]
[1]Izumi Dental Clinic

外傷歯の多くは適切な診断と治療により、ほとんどの症例において歯髄と歯を保存し、長期にわたる審美と機能を回復できる。しかし、脱離歯の遅延型再植や歯根破折で複数の歯根破折がある症例は保存困難な場合がある。このような場合、一般的に自家歯牙移植、インプラント、ブリッジによる欠損補綴が行われるが、自家歯牙移植は適切なドナーが必要であり、インプラントは特に若年者において低位咬合のリスクが高く、ブリッジは両隣在歯の支台歯形成が必要になるため歯髄壊死のリスクが伴う。このような症例において、接着ブリッジがこれらの問題を解決する可能性がある。しかし、これまで報告されている接着ブリッジの成功率は自家歯牙移植、インプラント、ブリッジより低いため、適応症の選択や形成デザイン、材料の選択、接着への適切な知識が不可欠になる。本講演では接着ブリッジの科学的根拠と臨床のポイントについて述べたい。

自家歯牙移植の手技と勘所

Tomonari,Hirai[1]
[1]Hirai Dnetal Clinic

根管治療やコンポジットレジン充填などと異なり，自家歯牙移植は日常的に頻繁に行う処置ではない．しかし遭遇する機会は少ないものの，欠損部に余っている歯を用いる自家歯牙移植という治療法は，天然歯を活かし利用するという点で，非常に価値のある手法であると考えている。

欠損補綴の一手法としてインプラントが挙げられる．インプラントは実技等習得する機会が多いものの，自家歯牙移植の学びの場は少ないように思われる．そこで今回は，これから自家歯牙移植を始めようと思っている方や，多少の経験はあるものの，臨床をよりステップアップしたい方へ向けて，ヒントとなる手技についてお話ししたい。私が留意しているコツや，臨床に活かせる基礎的な内容を交え，予知性の上がるためにできることを，症例を通してお伝えしてみたい。

自家歯牙移植による歯周組織の再生

Hiroyuki,Saida[1]
[1]斉田歯科医院

自家歯牙移植の最大の魅力は歯根膜の力を活用できることである。歯根膜には再生機能に加えて、恒常性維持機能、感覚機能、支持機能、栄養機能がある。骨芽細胞、セメント芽細胞をはじめ多くの間葉系幹細胞を有し、歯周組織を再生する力を持つ。歯周病の進行により高度に歯周組織が失われた部位に自家歯牙移植を行うことで、歯根膜の力を利用して歯周組織を再生することが可能である。ドナーが非機能歯や隣在歯に問題を起こしている歯であれば、その価値はさらに高い。

一方で非機能歯をドナーとする際の難しさは、その歯に機能圧が掛かっておらず動揺がないことが多く、歯根形態によっては抜歯操作時に歯根膜を傷つけるリスクがあることにある。そのようなことが懸念されるドナー歯に対しては、私はジグリング力をかけるような術前矯正を行なっている。その際のポイントについてもお伝えしたい。

症例を通じて自家歯牙移植の選択基準、長期経過など、自家歯牙移植の魅力と可能性をお伝えしたい。

Digital application in autotransplantation: How to make a 3D replica with free software

Yosuke,Tsukiboshi[1]
[1]Tsukiboshi Dental Clinic

Digital technology in dentistry continues to advance and clinical practice is now impossible without it. In particular, the development of free software has been remarkable, allowing various things such as tooth segmentation from CBCT and surgical simulation of autotransplantation without the use of paid software. In my lecture, I'd like to share my digital workflow of how to make a 3D tooth replica and examples of digital application in autotransplantation especially in ortho patients.

Outcomes of Apexification and Regenerative Endodontics in traumatized teeth

Sobczak,Michał[1]
[1]Specialized Dental Practice, Warsaw

The possible endodontic treatments for necrotic or irreversibly inflamed immature teeth are apexification and regenerative endodontics. Regenerative endodontic treatments are growing in popularity and creating more complex treatment protocols, but still are not well documented. Moreover, the effect of dental trauma on the prognosis is questionable. Differential diagnosis to select appropriate endodontic treatment in such cases vary depending on the case selection criteria and maturity of the root. This lecture aimed to evaluate the current level of evidence for both techniques in the management of traumatized necrotic immature teeth, in the light of own experience, current publications and guidelines.

Intrusions and root fractures - where are we today?

Georgios,Tsilingaridis[1,2]
[1]Karolinska Institutet, Division of Pediatric Dentistry
[2]Center of Pediatric Oral Health Research

Although these injuries are relatively rare, their potential consequences for patients can be significant and long-lasting. Intrusive injuries can lead to complex dental issues, including damage to the periodontal ligament, pulp necrosis, and root resorption, all of which can compromise the long-term health and function of the affected teeth.
Root fractures, on the other hand, generally have a more favorable prognosis, but successful outcomes depend heavily on the appropriate diagnosis and treatment. The location of the fracture on the root plays a critical role in determining the best course of action. For instance, fractures in the apical third of the root may require different management strategies compared to those in the middle or cervical thirds.
This lecture aims to present evidence-based best practices for treating both intrusions and root fractures. By examining current research and clinical guidelines, we will explore the most effective treatment options available. It is crucial to understand that the initial treatment decisions made at the time of injury can significantly influence both the short-term and long-term outcomes for patients.
We will discuss various treatment modalities and long-term monitoring strategies. Emphasis will be placed on the importance of timely and accurate intervention to optimize healing and recovery. Attendees will gain a comprehensive understanding of how to manage these challenging dental injuries to ensure the best possible prognosis for their patients.

Gen Y dental trauma education for dental students: real-time, interactive and leading-edge

Yuli,Berlin-Broner[1]
[1]University of Alberta

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.

THE INTERDISCIPLINARY APPROACH OF COMPLEX TRAUMATIC DENTAL INJURIES IN THE YOUNG PERMANENT DENTITION.

Geertje,Van Gorp[1]
[1]KU Leuven Department of Oral Health Sciences

Traumatic dental injuries are common in children and adolescents worldwide. Childhood is the period of live where orofacial growth and development of the permanent dentition take place and preserving a tooth with a traumatic dental injury during this period can be challenging and sometimes not feasible.
The consequences of TDIs may influence the long-term survival of traumatized immature teeth and represent a unique challenge for the dental practitioner for a variety of reasons.
Traumatic dental injuries (TDIs) can lead to various tissue responses related to the dental pulp and periodontal tissues. A detailed history of the traumatic event, along with a thorough evaluation of the injury based on a careful clinical and radiographic examination, are essential for an accurate diagnosis of the type of the traumatic insult and of the type of tissue response. Diagnostic radiographs establish baseline records at the time of the initial examination to allow objective assessment at follow-up appointments. Monitoring and re-evaluation at appropriate time intervals, based on clinical and radiographic examinations, remain essential. In some cases an endodontic intervention will be necessary. Endodontic treatment of traumatized immature permanent incisors is challenging because of the very thin walls of the root canal, large pulp chamber and widely open apices with absence of a natural constriction in the apical part.
If orthodontic treatment of affected teeth is being considered, guidance for clinical management is recommended. Orthodontic management of traumatized teeth depends on the type and timing of the trauma, the affected tooth's prognosis and the patient's orthodontic status. Since dental trauma is complex and variable, recommendations and guidance for practitioners would be helpful. Interdisciplinary communication between orthodontist, endodontist, general dentist, paediatric dentist, dentomaxillofacial radiologist and restorative dentist must be considered.

LUNCH&LEARN ABSTRACTS

Saving the unsalvageable: non surgical management of traumatized teeth with guarded prognosis in adolescents

Nitesh,Tewari[1]
[1]Pediatric Dentistry, CDER, AIIMS, New Delhi

Traumatic dental injuries have been recognised to be associated with several immediate and long-term consequences. The time lapse from injury to adequate management should ideally be as little as possible for the best prognosis. However, due to certain avoidable and unavoidable circumstances, the management of these injuries gets delayed. As a result, the injured teeth undergo severe changes such as pulp necrosis, pulp canal obliteration, external inflammatory root resorption, external replacement resorption, apical periodontitis, and marginal bone loss. Such sequelae are also related to inadequate care that is not based upon the guidelines or lack of follow-up. In contemporary dentistry, such teeth are regarded as hopeless or having guarded prognosis. However, with the advent of newer materials and a deeper understanding of the pathophysiology of the development of such conditions, more predictable treatment modalities have been explored. These treatment approaches are usually termed as nonsurgical endodontic management or regenerative endodontic protocols. They are based upon breaking the cycle of osteoclastogenesis and inducing the osteo/odontoblastic activity by certain specifically articulated steps. This table clinic highlights these aspects of diagnosis and management of the teeth with late complications of traumatic dental injuries.

Luxations on permanent dentition. Emergency care, treatment and prognosis.

César,de Gregorio[1,2,3]
[1]Board Director, IADT.
[2]Subdirector. Program in Endodontics. King Juan Carlos U.
[3]Affiliate Professor. Department of Endodontics. U. of Washington

Traumatic dental injuries are suffered by 20-30% of the population at some point of their life. Although many of these injuries are minor coronal fractures or subluxations, an important number of these injuries are related to luxations or avulsions, which have severe consequences in the lifespan of these teeth, promoting internal and external resorptions as well as discrepancies in the alveolar growth.
The IADT (international Association of Dental Traumatology) proposes a clinical guidelines made by a group of experts and based on scientific base. During this table clinic, a review of these guidelines will be brought to the audience through different clinical cases related to lateral luxations and the scientific base will be discussed.

Post-Traumatic Resorptions: Differential Diagnosis and Management

Nestor,Tzimpoulas[1]
[1]Private practice limited to Endodontics, FIADT

Root resorption after traumatic dental injuries (TDI) is a poorly understood phenomenon which is often misdiagnosed and many times inappropriately treated.
Root resorption is the loss of dental hard tissues because of odontoclastic action.
Permanent teeth are protected from external and internal root resorption processes by barriers on the outer root surface by cementum layers and on the inner root canal wall by a layer of predentin respectively.
However, TDI can have a direct impact and damage those protective layers exposing the underlaying dentin to clastic cells.
The prognosis of teeth developing root resorptions can be questionable and in many cases without therapeutic intervention poor.
To ensure prevention or early detection and optimal treatment of root resorption it is essential to understand the underlying pathophysiological processes.
The aim of this presentation is to update clinicians with the most recent literature with regards to etiology, prevalence of different types of root resorptions in each dental trauma scenario and provide a practical clinical guide for optimal diagnosis, classification and management of post-traumatic resorptions.

Tips for Successful Anterior Composite Resin Restorations

Shinya,Iida[1,2,3,4,5,6]
[1]Society of Japan Clinical Dentistry
[2]The Academy of Clinical Dentistry
[3]Japan Society for Adhesive Dentistry
[4]Japan Society of Periodontology
[5]The Japanese Academy of Clinical Periodontology
[6]Japan Prosthodontic Society

By utilizing adhesive techniques, dentistry has changed to a much more tooth-preserving approach than in the past. Since dentistry is an irreversible procedure, it is necessary to try to preserve the tooth structure as much as possible. This is especially true for younger patients.
This lecture will discuss CR restorations of anterior teeth, which are representative of adhesive dentistry. There are two important factors for esthetic success of CR restorations of anterior teeth. It is important to correctly understand the “morphology and color” of anterior teeth. In terms of morphology, the anatomical characteristics of the anterior teeth must be known. In terms of color, it is important to know how to select CR among many shades. A small difference in knowledge can make a big difference in treatment outcome in CR restorations. So in this lecture, I will explain what we need to know about them at the chair side.

The origin of Enterococcus Faecalis in the root canal system: a literature review

Peter,Duckmanton[1];M,Lim[1];M,Atzemidakis[1];D,Tan[1];A,Lukomskyj[1];A,Lalousis[1]
[1]Previously University of Sydney and Sydney Dental Hospital

The presence and source of Enterococcus faecalis in the infected root canal system is of critical importance to endodontic treatment. E. faecalis is commonly associated with asymptomatic, nonhealing periradicular lesions in refractory cases of root canal treated teeth.
The combination of virulence factors and its ability to invade, colonise and survive despite treatment aimed at its eradication means that preventing its entry into the canal system may represent a more logical treatment target.
Preventing infection with E. faecalis, rather than attempting to eliminate an established infection of this tenacious microorganism would be ideal. However, in order to achieve this goal an understanding of the sources of infection is essential. This review examines the available evidence regarding E. faecalis and its origin in endodontic infections including primary, persistent and secondary infections. Possible sources of E. faecalis include both endogenous sources and exogenous sources.
A comparison of intra-patient saliva, root canal and stool samples of E. faecalis revealed genotypic differences between E.faecalis found in the stool sample and root canal samples. This preliminary evidence suggests that E. faecalis isolated from root canals may not be of endogenous origins. Current evidence suggests that the likely origin, however, is exogenous in nature. E. faecalis is not normally found as a coloniser in the oral cavity of healthy dentitions with an absence of root canal treated teeth.
Possible exogenous sources of E. faecalis include nosocomial transmission through healthcare workers and their environment, certain foods which harbor the bacterium, poor hygiene practices by patients and potentially through inadequately sealing restorations, including temporary restorations. This review demonstrates that there is a limited body of evidence regarding the transmission of E. faecalis in the dental setting and that there is significant potential for research that may be used to guide future treatment modalities.

Emergency care of dental trauma

Lumnije,Kqiku[1];Kurt,Ebeleseder[1]
[1]Medical University of Graz

Acute traumatic dento-alveolar injuries of permanent teeth occur mainly in children, adolescents, and younger adults
The most commonly used classification system for dental trauma is Andreasen's classification and is applied to both primary and permanent teeth. It distinguishes between 4 types of fractures (crown fracture, crown-root fracture, root fracture and fracture of the alveolar process) and 6 types of luxations, respectively dislocations.
Managing dental trauma is based on proper diagnosis of the type of injury, treatment techniques also for immature teeth, prospective treatment planning and follow up.
Avulsion, Extrusion, Intrusion, Lateral luxation and alveolar process fractures are the most serious injuries in the permanent dentition and need a prompt and correct emergency management.
Soft-tissue injuries of the face and the oral cavity are frequently seen in traumatic dental injuries. These types of wounds can be scarifying. Suturing of lip lacerations should be carried out after intraoral injuries of urgent character have been treated. Otherwise it may be difficult to enter the oral cavity once edema has started to develop.
The most common procedures employed in managing of dental trauma include surgical, endodontic, restorative, and orthodontic treatment.
In this lecture, emergency care of complex dental trauma will be presented.
The aim is to improve the knowledge on initial dental trauma treatment.

小児の口腔外傷　-特に乳歯の陥入について-

Takanobu,Haruki[1,2,3,4,5]
[1]Specialist, Japanese Society of Pediatric Dentistry
[2]Board Certification, Japan Orthodontic Society
[3]Specialist, Japanese Society of Dentistry for the Disabled
[4]President of Kinki Region, JSPD
[5]Part-time lecturer, Pediatric Dentistry, Osaka Dental Unversity

小児歯科臨床において、近年減少傾向にあるう蝕や歯肉炎と比べ、相対的に歯の外傷は増加傾向にあります。また他の歯科疾患と違い緊急性を要し、症例ごとに様々な症状を呈しています。さらに歯の外傷は受傷歯のみならず、受傷者の口腔機能や審美性、心理面へも大きな影響を与えます。

そのため小児歯科医にとって、不幸にも口腔外傷を負った小児に対して、いかに迅速に手際よく、適切な処置を行うかが、非常に重要です。

今回、当院で経験した小児の外傷が発生して連絡を受けた時からの対応、治療、治療結果について、乳歯の外傷に対するガイドラインからは逸脱した治療についても、小児歯科医としての視点でお話させていただきたいと思います。

今回のテーブルクリニックを通して、外傷歯のガイドラインに対する考えも含め、先生方から忌憚ないご意見をいただければと思います。子どもたちの明るい未来のため、小児歯科医として少しでもお役に立てると幸いです。

Leveraging Digital Simulation in Tooth Transplantation

Hidetoshi,Aimiya[1]
[1]愛知県名古屋市開業　吹上みなみ歯科

To increase the success rate of tooth transplant surgery, it is essential to use digital simulation for preoperative planning. In this presentation, I will explain the actual surgical process using a 3D model to simulate and confirm the morphology, position, and angle of the transplanted tooth. The presentation will include a hands-on demonstration, which can only be done in a table clinic setting, and a video of an actual surgery to explain the procedures for achieving a successful outcome.

Though you can't stop using this mouth-guard, you still have to know how and when to use it.

Yoshinobu,Maeda[1]
[1]Osaka University Graduate School of Dentistry

スポーツ活動時の口腔顎顔面領域での外傷の予防、軽減にマウスガードを使用するのが有効なことは科学的な根拠が示されている。しかし 現実にマウスガードが必要と考えられる競技においても利用している選手は少ない。その理由には「異物感がある」「しゃべりにくい」「呼吸しにくい」が多くを占めている。そこで本テーブルクリニックで提案したいのがこれらの問題を解決した「使いたくなるマウスガード」である。そのポイントである「適合」「外形」「咬合」をいかに実現するか、ならびに正しい使用法を解説する。

Efficacy of mouthguards for preventing or reducing traumatic injuries during sports evets ha epidemiological studies. In reality, however, not every athlete who should use mouthguard wear them due to some problems. Uncomfortableness, speaking disturbance and breathing difficulty are three main reasons. In this table clinic, I would like to propose mouthguards which can solve these main problems by focusing “proper fit”” proper out line “and “proper occlusion”. Though athletes cannot stop using mouthguards, whyever you should teach how and when to wear them

Sequelae in Permanent Incisors following the Traumatic Injury of their Predecessors

Takeshi,Tokura[1,2]
[1]Takeshi’s Orthodontics and Pedodontic Office
[2]Department of Paediatric Dentistry, Aichi-Gakuin University

Dental trauma in children and adolescents is a common and severe problem, especially with the high rate of incidence during primary dentition between the first and third years of age1. During the primary dentition stage, the teeth most affected are the maxillary deciduous central incisors2-3. Eruption disturbance (including for example irregular eruption) of the maxillary central incisor is one of the traumatic sequelae following injury of the primary predecessors.
The specific interactions between the child, their parents and the pediatric dental team all influence prognostic factors. And parental knowledge about dental trauma is crucial to long-term success and recovery – particularly given that children can be negatively influenced by their parents showing a high level of anxiety4. Many parents are not aware that regular long-term follow-up is crucial to avoiding complications after traumatic injuries, until the normal eruption of the successors. It is therefore important to educate parents not only on the acute phase but also on the long-term consequences - such as the direction of eruption, tooth morphology, and the case by case costs of orthodontic treatment.
The aim of this table clinic is to present a clinical case where the maxillary central incisor is erupted in a palatal direction, approximately 2 years posttrauma of the primary predecessors, causing malocclusion with anterior crossbite. Early detection and treatment of eruption disturbance of permanent teeth can result in avoidance of aggravation of malocclusion.
Hence, when and how to inform parents of prognostic factors is the key to successful consequences and effective approaches. In other words, the implementation of prior strategy in cooperation with parents makes it possible to avoid some complications that may otherwise result from a lack of parental compliance.
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外傷歯の治療法　基礎編

Noriaki,Yoshida[1,2]
[1]代々木クリスタル歯科医院
[2]Yoyogi crystal dentalclinic

外傷歯患者は予期せず現れ、その状態に応じた適切な処置が求められる。しかし、歯牙硬組織、歯内、歯周、口腔内外組織の外傷を含め治療対象は多岐にわたり、診断は複雑な要素が組み込まれるため、総合的な理解と経験が必要となる。

この度、IADT の外傷歯ガイドラインをもとに、診断と治療法が一目でわかるよう一覧表を作成した。

一般診療の中で外傷歯治療の頻度は決して高くはないだろう。その中で急に訪れる外傷歯患者へ適切に対応できるよう作成したものである。

診断・治療法の一助として、また外傷歯治療への理解が深まるよう考慮した。診療室の片隅に置いていただき、外傷歯治療への後押しとなれば幸いである。

今回テーブルクリニックにて、この一覧表をもとに外傷歯の診断と治療法を提示し、その根拠を基礎からわかりやすく解説したい。

Exploring the Frontier of Digital Innovations in Managing Traumatized Teeth in Aesthetic Zone

Shogo,Ando[1]
[1]Namikidori Dental Clinic

The landscape of aesthetic dentistry is undergoing a transformative shift with the integration of advanced digital technologies. Innovations such as Computed Tomography (CT), Computer-Aided Design/Computer-Aided Manufacturing (CAD/CAM) systems, Intraoral Scanners (IOS), and 3D printing are redefining the paradigms of prosthetic clinical practice.
These technologies are pivotal in enhancing the accuracy, quality, and efficiency of treatments from the initial diagnosis through to the final prosthesis fabrication. In the realm of aesthetic dentistry, particularly when addressing dental trauma, achieving functional stability is a critical, yet insufficient goal. A comprehensive approach, incorporating both surgical and prosthetic interventions, is essential for achieving optimal aesthetic outcomes. This lecture aims to elucidate the application of digital tools in the management of the external aspects of the anterior teeth trauma, highlighting the synergy between technological advancements and clinical expertise in advancing patient care.

外科的歯内療法の選択基準

Kazuhiro,Fukunishi[1]
[1]福西歯科クリニック

2023 年に刊行された「歯内療法学専門用語集 第２版」に難治性根尖性歯周炎の定義が記載されている。それによると、「術前のX 線などの検査で、根尖孔まで器具が挿入でき、通常の根管治療で治癒すると予想されたにもかかわらず、治癒しない症例」とある。一方、「根管の著しい湾曲や狭窄、除去困難な根管内小器具の破折や穿孔などの偶発症により、一連の根管拡大・形成と根管充填が不完全となるため治癒に導けない症例」を難症例と呼び、的確な処置を行うことが難しいとしている。

いずれにしてもそれらの症例を治療するために「外科的歯内療法」を実践することは少なくない。外科的歯内療法には、いくつかの処置法が紹介されているが、代表的な術式として、「歯根端切除術」と「意図的再植」が挙げられる。通常は、前者が第一選択され、それが適用できないケースの最終手段として後者を検討する。

今回は、まず難治性根尖性歯周炎について整理し、両者の適応症や術式について解説する。

DH SESSION ABSTRACTS

子どもの未来を守るカリエスマネジメント

Seiichi,Sugiyama[1];Ai,Hasumi[1]
[1]Sugiyama Dental Clinic

歯を喪失する原因は歯周病が多いと思われていますが、いろいろな調査結果をみますと、う蝕関連疾患(う蝕･破折･根尖病変)による抜歯が歯周病よりも多くなっています。一度切削修復を受けた歯は、残存歯質の破折や二次う蝕から失活歯となり、歯根破折のリスクが高まり抜歯にいたることが多くなります。従って、生涯にわたり快適な生活をおくるためには、小児若年期から成人になるまでの切削修復を避けて健全歯質を保つことが大事です。う蝕は、脱灰と再石灰化のバランスが崩れた状態であり、う窩に進行する前の早い段階で、う蝕病変をDetectionして、カリエスリスクアセスメントを行い、適切なタイミングで非切削う蝕治療を行えば、う蝕病変の進行を停止(Arrest)させて切削修復を避けることができます。こどもの未来を守るためには、従来のう蝕治療から脱却して、健全歯質保存のためのカリエスマネジメントを臨床に導入することが必要です。

妊産婦によりそってDHができること

Tomoko,Sugiyama[1]
[1]月星歯科クリニック

妊産婦が歯科に訪れた時に、歯科衛生士はまず何について見るべきであろうか。

「痛い」が主訴ならば、決められた期間までに治療計画を立てなければならない。

「妊産婦検診」で来院されたなら、口腔内を見て気づく力、そして、妊娠中や産後に起こりうる口腔内のトラブルについて考え、母子ともに健康で過ごせるように患者教育をする力が必要である。

そのためには、胎児の発育時期、妊産婦の健康状態や口腔内を理解し、レントゲンや薬の服用について知ることである。妊婦は出産のその日まで不安と体に起きる変化にストレスを感じながら生活をしている。治療に対しての不安や悪阻によって思うように磨けなかったり食べられないなど、歯科衛生士が妊産婦について理解をし、寄り添ってあげられる立場だからこそ、我々が知っておくべきことをお伝えしたい。

長期的な関わりから考える歯科衛生士の役割とは

Yayoi,Ito[1]
[1]月星歯科クリニック

歯科衛生士として一つの歯科医院に所属して数十年。
様々な患者との関わりのなかで多くの経験を積ませていただいた。また、治療を終えても定期的な管理のために来院される患者が増え、患者を長期的に診るという経験ができた。継続的に診るなかで、起こりうるトラブルを未然に防ぐことが求められるが、そこには口腔内の状態だけでなく、生活背景や全身状態などにも目を向け、つねに患者の気持ちにも寄り添う必要があると考える。今回は私自身の臨床経験から考えさせられたこと、学んだことをお伝えしたい。

歯周治療成功に導くポイント

Miki,Ishihara[1]
[1]株式会社　COCO DentMedical

令和４ 年の国民歯科実態調査によると８０２０の達成は51. ６%達成・４０ 歳以上の残存歯数は増加、定期的なメインテナンスの受診率は５８%、補助器具を用いた歯間部清を行っている割合は50. ９%と増加傾向であることが示されました。
その反面、高齢者のう歯をもつ者の割合や７５歳以上の４mm以上の歯周ポケットをもつ者の割合は増加しており歯が残っていくことによる問題がクローズアップされました。
歯周病は主たる原因の細菌性プラークに宿主の免疫力そしてリスクファクターの関与によって発症し進行していきます。
歯周治療は感染のコントロールが最も重要であり、どのように患者さんのやる気を向上させるのか、どのようにプラークコントロールをあげていくのか、SRP の技術レベルや探知能力の向上、リスクファクターのコントロールにおいても患者さんと共に方法を模索しながら試し定着へと導いていきます。今回は臨床から歯周治療を行う際のポイントをいくつかまとめさせていただきます。

チームでレベルアップ！歯周治療

Tetsuya,Mizukami[1]
[1]医療法人水上歯科クリニック

歯周治療の最終目標は天然歯列の保存であり、歯周病の発症予防から発症後の治療介入、そしてメインテナンスによる再発予防と長期にわたり口腔内の健康を維持することです。そしてその性質上歯周治療は最もチームによる連携が必要とされる治療分野の1つといえます。

歯周治療は基本的に原因除去治療であり、非外科的な歯周基本治療を経なければなりません。この基本的な非外科的な原因除去の治療プロセスの多くは担当歯科衛生士が担うこととなります。

再評価後に外科的な治療介入が検討される場合、ポケット数値の変化やＸ線での骨欠損の形態のみならず口腔習癖や開口量、筋肉の緊張度、唾液量などを加味して治療方針を選択してゆきます。この治療選択おいても歯科医師と担当歯科衛生士との情報共有が成功の鍵となります。

今回の講演では歯周基本治療から外科処置に至るまでの治療のリアルな現場を紹介するとともに各治療における重要なキーポイントの解説を行いたいと思います。

これから歯周治療に本格的に取り組みたい方や今以上にレベルアップを図りたい方の役に立てば幸いです。

Oral Scientific Research

Effect of Topical Application of Cell Culture Media on Root Resorption of Replanted Rat Incisors

Salem,Katayoun[1];Fatemeh,Khalilzadeh[1];Ali,Anissian[1];
Zohreh,Khalilak[1];Negar,Raissii Dehkordi[2];
Nastaran,Raissi Dehkoridi[2];Fatemeh,Shaahsavari[1]
[1]Islamic Azad University
[2]Shahid Beheshti University of Medical Sciences

Keywords: Avulsion, Cell culture media, HBSS solution, Root resorption

Katayoun, Salem*, Fatemeh, Khalilzadeh*; Ali, Anissian*; Zohreh, Khalilak*; Negar, Raissi Dehkordi**; Nastaran, Raissi Dehkordi**, Fatemeh, Shaahsavari*

* Faculty of Dentistry, Tehran Medical Sciences, AZAD University, Iran
**Medical School, Shahid Beheshti University of Medical Sciences, Iran

Aim: To evaluate the effect of topical use of cell culture media on root resorption in replanted rat incisors.
Materials and Methods: Seventy-one Maxillary right incisors from 71 Wistar rats, were
extracted and randomly divided into 5 groups: A) Kept dry (KD) for 30 minutes, B) KD,
immersion in Dulbecco Modified Eagle's Medium (DMEM) for 15 minutes. C) KD,
immersion in DMEM for 60 minutes, D) Kept moist (KM) in HBSS for 30 minutes, E) KM in
HBSS, then immersion in DMEM for 60 minutes. Pulps were extirpated and canals filled with calcium hydroxide commercial paste. After Eight weeks, 4 µm sections from the middle of root were obtained for histological evaluation. Data was analyzed by Kruskal Wallis, (α=05). Pair comparisons were conducted using Dunn's test.
Results: The groups were significantly different in the terms of replacement resorption (RR) and inflammatory resorption (IR) (P<.05). The lowest rate of RR (35%) and IR (42.9%) were both observed in group B. In pair comparisons regarding RR rate, group B was superior to all groups (P<.05) except to group E. In respect to IR, higher rates of IR were observed in group D vs A, and C vs E (P<.05).
Discussion: In dry situation, 15- minute immersion in DMEM leads to the lowest rate of
ankylosis and inflammatory resorption. In wet storage (HBSS), 60 minutes immersion in DMEM accompanied with the least rate of ankylosis, but was comparable to HBSS in regard to inflammatory resorption.
Conclusion: Root ankylosis decreased after avulsion by immersing in cell culture media in
both dry and wet storages.
There was no conflict of interest.

Study on the mechanical and optical properties of newly developed composites for dental splints

Hong-Keun,HYUN[1]
[1]Seoul National University School of Dentistry

This study aimed to investigate the mechanical and colorimetric properties of newly developed composites for dental trauma.
G-Fix (GF), Ortho Connect Flow (OC), Light Fix (LF), and Filtek Z350XT (FZ) were selected. Mechanical parameters, including elastic modulus, compressive, flexural, and diametral tensile strength, were measured. In the colorimetric investigation, clear shades of GF, CF, LF, and FZ were formed into disk-shaped specimens. CIE values were measured at 1 day, 1 week, 2 weeks, 3 weeks, and 4 weeks after storage in each staining solution. Color differences and translucency parameters were calculated using the initial and measured values.
LF, GF, and CF have lower flexural strength and elastic modulus than FZ. The flexural and compressive strengths of LF were the lowest, whereas the diametral tensile strength was the highest. Within the experiment period, the color differences of GF, OC, and LF compared to the initial measurement were smaller than that for FZ for all staining solutions except distilled water. There were no significant color differences between the GF, OC, and LF groups.
GF, OC, and LF might be worthy of consideration as composites for splinting teeth when compared to the control, FZ, in both mechanical and optical aspects.
The author has no conflicts of interest to disclose.

Dental pulp tissue-like regeneration using amelogenin in teeth with opened apex and apical periodontitis.

Fatma,Rashed[1];Maha,Mounir[2]
[1]Faculty of Dentistry, Zarqaa University
[2]Faculty of Dentistry, King Abdulaziz University

Keywords: Amelogenin, open apex, pulp regeneration

Fatma Rashed1, Maha M. F. Mounir2

1Department of Basic Medical and Dental Sciences, Faculty of Dentistry, Zarqa University, Zarqa, Jordan.
2Department of Oral Diagnostic Sciences, Faculty of Dentistry, King Abdulaziz University, Jeddah, Saudi Arabia.

Dental pulp has a unique neurosensory system, and the vitality of dentin-pulp complex depends on cell activity and signalling processes. Amelogenin protein regulates cell signalling pathways during tooth development by activating Wnt/β-catenin intercellular signalling pathway. This study aimed to regenerate a vascularized pulp in necrotic root canals by cell homing using recombinant amelogenin protein.
A total of 120 root canals with opened apex were used. All canals were left for 14 days to become contaminated with oral microbes then cleaned. Canals were divided into 2 groups; one group was filled with amelogenin, second group was left empty. Samples were evaluated after 1 and 3 months, histologically and with immunodetection of Sox2, Oct4, Vascular endothelial growth factor (VEGF), Wnt1a, Wnt 3a, Wnt 10b and Glial Fibrillary Acidic Proteins (GFAP). IC50 was used to determine cytotoxicity.
Regenerated dense cellular tissue was seen in apical part of amelogenin-treated root canals, and regenerated delicate vascularized tissue was observed in radicular and pulp chamber. Cells found in the regenerated soft tissue expressed Wnt family members that regulate stem cell pluripotency. Pluripotency markers (Sox2 and Oct4) could be identified in the newly formed apical papilla and dental follicle. VEGF in the regenerated pulps indicated neovascularization. The neuro-sensory organ was replicated in the regenerated dental pulps demonstrated by GFAP immune reactivity. IC50 test showed that recombinant amelogenin protein has a safe dose at high-level concentrations.
Recombinant amelogenin protein induces pulp regeneration most likely from the Sox2 identified stem cells within the apical papilla and can enhance apex formation in non-vital open apexed teeth.

The authors have no conflicting interests.

Developing an Artificial Intelligence Model for Application in Dental Traumatology

Thikrayat,Bani-Hani[1]
[1]Jordan University of Science and Technology

Background: Early diagnosis of dental fractures is the key to early intervention and favorable treatment outcomes. Crown fractures are generally discernable clinically, whereas diagnosis of root and crown-root fractures require a careful clinical and radiographic examination. Yet, some fractures, may not be easily detectable on radiographs particularly for the less experienced dentists. The use of Artificial Intelligence (AI) in radiographs analysis and interpretation has shown great potential in the medical field. In recent years, Machine Learning (ML) has been utilized successfully in many human bone fractures detection and classification. In this study, an AI model was employed to diagnose dental fractures using different ML algorithms.

Aim: The purpose of the present study was to diagnose traumatic dental injuries (fractures only) using plain radiographs through ML algorithms. Secondarily, the study sought to determine the accuracy of ML models in dental fractures diagnosis in comparison to professional assessment.

Materials and methods: The dataset included one hundred periapical and occlusal radiographs that were collected from patients' records. Diagnoses were confirmed and images were annotated by two specialists who are trained in dental traumatology. The number of these radiographs was increased with different techniques for the success of deep neural networks. Images were processed for ML training to allow automated detection, localization, and classification of fractures. The sensitivity, specificity, and accuracy of the ML model were determined and compared to professional assessments.

Expected results*: The ML models are expected to show high accuracy in the diagnosis of dental fractures. Thus, their application in dental traumatology can help the less experienced dentists in making more accurate diagnoses and improve patient outcomes.

* This study is still ongoing; results are expected before the scheduled conference

In vivo assessment of synthetic toll-like receptor 9 ligand molecules for the treatment of the afflicted dental pulp following tooth replantation in mice

Angela,Quispe-Salcedo[1];Hayato,Ohshima[1];
Tomohiko,Yamazaki[2]
[1]Faculty of Dentistry, Niigata University
[2]National Institute of Material Sciences (NIMS)

Keywords:dental pulp, tooth replantation, mice

Aim: Synthetic oligodeoxynucleotides (ODNs) containing unmethylated cytosine-phosphate-guanine (CpG) motifs (CpG-ODNs) are ligand molecules for toll-like receptor 9, which is expressed by odontoblasts in vitro and dental pulp cells. This study aims to clarify the effects of CpG-ODNs on the pulpal repair process after tooth replantation.
Materials and Methods: Following tooth extraction, the upper right first molars of 3-week-old ICR mice were immersed in Type-A(D35) or -B(K3) CpG-ODNs solutions (0.1 or 0.8 mM), or control, for 30 minutes and then replanted. The progression of the pulpal healing was evaluated by H-E and AZAN staining, immunohistochemistry for Nestin, Ki-67, PGP 9.5, CD31, TLR9, F4/80, CD206, and TUNEL assay.
Results: One week after operation, expanded inflammatory reactions were observed in all experimental groups. However, Type-B CpG-ODNs (0.1 mM) showed a positive trend on the quantitative analysis for Nestin, TLR9, and F4/80 immunohistochemistry. At Week 2, the number of proliferative cells increased along with newly-formed hard tissue deposition in the pulpal space of replanted teeth treated with CpG-ODNs solutions, especially Type-A (0.1 mM). No morphological differences were observed in collagen deposition, neural, or angiogenic markers among all groups at this stage.
Discussion: Our data suggests that synthetic CpG-ODNs solutions may elicit an intense host immunomodulatory reaction in the pulpal tissue, leading to intense apoptotic activity, delayed cell proliferation, and rapid cell differentiation of pulpal stem cells or progenitors into odontoblast- or osteoblast-like cells for the establishment of the bone-like or tertiary dentin healing patterns in the replanted teeth.
Conclusions: Synthetic CpG-ODNs solutions at low concentrations favor the repair process and increase the rate of hard tissue formation in the afflicted dental pulp. Further *in vitro* experiments are required to understand the underlying mechanisms driving the pulpal responses caused by these immunomodulatory solutions.
COI: The authors declare no conflict of interest.

Mouthguard and dental trauma – Biomechanics and innovation aspects of use digital workflow

Carlos,Soares[1];Airin,Rondón[1];Lozada,Maribí[1];
Izabela,Cordeiro[1];Paulo Cesar,Bandeira[1];
Luis,Raposo[1];Priscilla,Soares[1]
[1]Federal University of Uberlândia, School of Dentistry

Keywords: Mouthguard, Dental Trauma, Digital flow, Biomechanics

Carlos J. Soares, Airin K. A. Rondón, Maribí I. T. Lozada, Izabela B. Cordeiro, Paulo C. J. Bandeira, Luis H. A. Raposo, Priscilla B. F. Soares.
Background/Aim: Digital workflow can impact the final thickness, adaptation and the shock absorption of mouthguards (MTGs). This study aimed to evaluate the effect of digital workflow compared with conventional protocol on the mechanical and physical properties of MTGs.
Materials and Methods: The EVA (BIOART) plasticized over the plaster and 3D printed models, with (3DT) or without gel coating (3DNoT) during post-cure, were cut and the flexible polymer (DIMA, KULZER) were printed following ISO 37-II (n=30). Shore A hardness, maximum breaking force, F (N), elongation, EL (mm) and breaking strength, BS (MPa) were measured. A typodont model with simulated soft gum was used to produce plaster model using conventional impression an 3D printed resin model using digital scanning (n=10). The MTG fabricated using both models were analyzed by thickness (mm), internal adaptation (mm) and the bubbles area (mm2) between 2 EVA layers were measured using CBCT images and Mimics software (Materialize). The MTG shock absorption was measured using pendulum impact at 30o.
Results: The printed MTG (DIMA) had lower Shore A, F and BS values than EVA. The EVA formed using 3DT resulted in higher of F, EL, and BS than over 3DNoT ($p < 0.05$). 3DnoT results in severe alteration of the EVA and greater reduction on the mechanical properties. The MTG made using digital workflow showed similar thickness ($p = 0.371$), shock absorption to and GIV-MTG (87.0%), and better adaptation of MTG made using plaster model ($p < 0.001$).
Conclusions: 3D printed model need to be covered by gel coating during the post-cure. The 3D printed MTG (DIMA) is a promisse material, but had lower mechanical properties than EVA, confirming that it should be not indicated for sports with severe impact. The EVA MTG produzed using workflow had similar performance than conventional protocol.
Conflict of Interest Statement: The authors confirm that they have no conflict of interest.
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Prediction model for the prognosis of luxated teeth

Haojie,Yu[1];Zhu,Haihua[1];Zhu,Fudong[1]
[1]Zhejiang University

Keywords:luxated teeth,Prediction model, periodontal, pulp, prognosis

Background: Tooth avulsion is one of the most severe dental injuries and tooth replantation is a crucial treatment for tooth dislocation. The effect of replantation is affected by a series of factors, such as storage media, tooth fixation type and repair method. This study aimed to analyze the prognosis of periodontal and pulp condition of replanted teeth.
Materials and methods: The retrospective study referred to the dental records and imaging information of patients who received treatment for dental trauma in the pediatric dentistry and emergency department of ZJUSS from January 1, 2012, to January 1, 2022. The study was divided into two parts. The first part involved reviewing patient records, collecting target data, and evaluating each radiography taken throughout the follow-up period. The second part was a review of all relevant variables at an early stage, which were added to build a model that predicts the outcome of replantation of luxated teeth based on early clinical variables. Furthermore, If any significant associations were found in the variable analysis, further multi-factor analysis was conducted to better evaluate the relationship between the studied variables and pulp periodontal outcomes.
Result: A periodontal logistics regression model for tooth replantation was established. The model was refined by combining the results of feature selection, parameter testing, and goodness of fit testing. The final model included pulp treatment, trauma time, storage media, and trauma type, and achieved a 72.22%; accuracy in predicting the periodontal outcome. Further analysis revealed that the factors mentioned above had a significant impact on the outcome of pulp treatment with a prediction accuracy of 96.81%, showing that the model has an excellent prediction ability.
Conclusion: In conclusion, the model developed to assess the impact of different factors on periodontal and pulp status has demonstrated high prediction accuracy and practical value. This model has significant clinical relevance and presents a valuable tool for a long-term prognosis for patients.

Clinical Management of Early and Delayed Replantation of Avulsed Maxillary Incisors: A Series of Clinical Cases

Singh,Tarun[1,2]
[1]All India Institute of Medical Sciences
[2]Bathinda (Punjab)

Keywords: Avulsion, Replantation, Traumatic Injury

Dr Tarun Kumar Singh, Assistant Professor, All India Institute of Medical Sciences, Bathinda, India
Aim:
The primary aim of this case series is to delineate the clinical management strategies employed in both early and delayed replantation scenarios of avulsed maxillary incisors. Specific objectives include assessing the success rates of different intervention techniques, identifying key factors influencing outcomes, and providing evidence-based guidelines for practitioners in diverse clinical settings.
Case Presentation/Methodology:
This series presents a retrospective analysis of clinical cases involving avulsed maxillary incisors. The cases were categorized into those involving immediate replantation and those where replantation was delayed. Methodologically, patient records, radiographs, and treatment protocols were systematically reviewed. Demographic details, causative factors, time intervals since avulsion, choice of storage media, root surface treatments, and post-replantation care were scrutinized. The methodology emphasizes a comprehensive examination of the clinical nuances associated with each case, providing a detailed account of the applied techniques and materials.
Discussion:
The discussion section interprets the findings, elucidating the successes and challenges associated with various clinical strategies. Emphasis is placed on the importance of timely intervention in early replantation cases, while addressing the complexities and considerations in delayed replantation. Comparative analyses explore the nuances of treatment protocols, root surface decontamination methods, endodontic considerations, and the incorporation of growth factors, fostering a comprehensive understanding of the clinical landscape.
Conclusion & Clinical Relevance:
The conclusions drawn from this series contribute to evidence-based practices in managing avulsed maxillary incisors. These cases underscores the clinical relevance of tailored approaches based on the temporal aspects of replantation. Practical guidelines derived from the findings are relevant for clinicians dealing with traumatic dental injuries, offering insights that can enhance patient outcomes and treatment efficacy.
Conflict of Interest:
The authors declare no conflicts of interest related to this research, ensuring transparency and impartiality in the presentation of clinical findings and recommendations.

Long-Term Outcome of Horizontal Root Fractures in Permanent Teeth: A Retrospective Cohort Study

Sheikhnezami,Mahshid[1,2]
[1]Faculty of Dentistry, University of Toronto, Canada
[2]Dental Trauma Center, ACECR, Mashhad, Iran

Keywords: Dental trauma, Root fracture, outcome

Author: Mahshid Sheikhnezami
Affiliation: University of Toronto, Dental faculty, Endodontics department

Aim: Horizontal root fracture (HRF) is a challenging entity of dental injuries since its diagnosis, management and prognosis can be affected by various factors such as severe dislocation, loss of pulp tissue, and treatment delay. This study aimed to evaluate the treatment outcomes of permanent teeth with a HRF.

Materials & Methods: This retrospective cohort study examined permanent teeth with HRF at a dental trauma center from 2006 to 2022. Follow-up for at least 12 weeks involved clinical and radiographic evaluations to assess intervention outcomes.

Result: 125 teeth from 103 patients were analyzed over a median follow-up of 79 weeks. Prognostic factors were analyzed using Pearson Chi-Square and multivariate logistic regression. The overall favorable outcome, characterized by clinical normalcy and radiographic evidence of healing at the fracture line was 92%. This included teeth that received baseline splinting and/or repositioning (62.2%), baseline endodontic intervention for the coronal fragment (85%), and follow-up endodontic intervention for the coronal fragment (91.8%). Incomplete root development was less likely to result in endodontic treatment and exhibited a more favorable outcome compared to complete root development. Moreover, delayed presentation >1 week was associated with a higher need for endodontic treatment compared to timely presentations within 24 hours

Discussion: Male sex and incomplete root development correlate with improved baseline outcomes and a reduced need for endodontic treatment. Conversely, delayed presentation increases the likelihood of requiring endodontic intervention.

Conclusions: Early diagnosis, appropriate treatment interventions, and close monitoring contribute to a favorable outcome in 92% of HRF cases.

The author denies any conflict of interest related to this study.

Referral pattern for management of traumatic dental injuries to Paediatric Dentistry team: A clinical services audit

Simran,Olikh[1];
Tengku Nurfarhana Nadirah,Tengku Hamzah[1]
[1]Faculty of Dentistry, Universiti Malaya

Introduction. Treatment timeliness is crucial following traumatic dental injuries (TDI) in children. This clinical audit aimed to assess the time-lapse of referrals for provisional management of TDI and establish a client charter in line with the International Association of Dental Traumatology (IADT) 2020 guidelines.

Method. A retrospective analysis of clinical records for children presented at the Emergency Department, Universiti Malaya Medical Center (UMMC) from 1st January 2022 until 31st December 2022. Data on demographics, attendance, diagnosis, and management were recorded and compared to the IADT 2020 guidelines.

Results. Records were available for 88 children (53 males, 35 females) with a mean age of 4 (SD ±3.59) years at the time of injury. 14 out of 88 children were diagnosed with TDI. Only 42.9% (6 out of 14 children) were referred to Paediatric dental clinic for follow-up. Luxation and tooth fracture injuries were the common TDI recorded.

Discussion. The audit identified difficulties in obtaining TDI patient records and incomplete clinical notes with no clear protocol on referral pathways for dental emergency cases. Late referrals for splinting involving avulsion and luxation injuries led to complications. Compliance with the IADT guidelines is therefore essential. Actions were implemented following the first audit cycle, including developing an algorithm for managing dental trauma cases based on IADT guidelines and providing continuous dental education for OMFS and the emergency team.

Conclusion. A clear algorithm for referring TDI cases can improve care by following IADT guidelines. Authors have no conflict of interest to declare.

Outcomes of apexification in immature traumatized necrotic teeth and risk factors for premature tooth loss: A longitudinal study with up to 20 years of follow up

Alina,Wikstrom[1,2,3];Malin,Brundin[4];
Georgios,Tsilingaridis[1,3]
[1]Dept of Paediatric Dentistry, Karolinska Institute, Stockholm
[2]Dept of Endodontics, Eastmaninstitutet, Stockholm
[3]Centre of Paediatric Oral Health, Huddinge
[4]Dept of Endodontics, Umeå University

Aim: To evaluate the long-term survival of immature traumatized incisors with pulp necrosis and apical periodontitis after endodontic treatment with two apexification techniques: calcium hydroxide apexification and MTA-apexification and to evaluate how different types of traumatic dental injuries (TDI) affect the long-term survival of those teeth.
Materials and Methods: Records of 2400 children and adolescents were screened for presence of TDI to immature incisors where endodontic treatment with the two apexification techniques was performed during January 2003 and December 2022, those compared to a control group of mature teeth treated with conventional endodontic techniques.
The studied variables were age, sex, type of TDI, pre-operative root development stage (RDS), pre- and post-operative Periapical index (PAI), the time-point for tooth loss and overall survival time in years.
Kaplan-Meier estimates were used to graphically show the survival functions. Cox proportional hazard (PH) model was used to calculate hazard ratios (HR) and 95% confidence intervals.
Results: The median survival time was 10.07 years for calcium hydroxide apexification, 16.09 for MTA-apexification, 15.5 years for mild luxation injuries, 12.5 years for intrusions and 6.8 years for avulsions.
The variables with significant negative impact on tooth survival were calcium hydroxide apexification, intrusion, avulsion and post-operative PAI 4-5. No significant relationships were found for the variables MTA-apexification, pre-operative RDS and post-operative PAI 2-3. The risk for premature tooth loss was appr. 7 times higher in calcium hydroxide apexification, 4.5-6 times higher in PAI 4-5, 4.5 times higher in avulsions and 2.5 times higher in intrusions.
Discussion: This study demonstrates that prolonged treatment with calcium hydroxide increases the risk for cervical root fractures which is supported by previous studies.
Conclusions: Calcium hydroxide apexification, avulsion, intrusion, and post-operative PAI 4-5 were identified as prognostic variables with a significant negative impact on tooth survival where also the poorest survival rates were found.

What happens if dental assistants take seminar about dental trauma?

Didem,Ozdas[1];Akif,Aslantas[1]
[1]İstanbul Aydin University Dentistry Faculty

Keywords:dental asistant, questionnaire, quality, education

Didem Oner Ozdas, Akif Aslantas
İstanbul Aydin University Dentistry Faculty

Aim: Teamwork is essential to the success of a dental office. Dental assistants play a critical role in promoting teamwork by working closely with dentists and other team members to provide quality care to patients. Dental trauma cases usually requires a well trained dental team. The aim of this study was to investigate the knowledge level of dental assistants regarding dental trauma.
Materials and methods : In a Vocational School of Health Services-Department of Oral and Dental Health Programme second year students were attended to present study. Before taking dental trauma seminar, a questionnaire consisting of 17 questions applied and results were recorded. One week later the same questionnaire applied again and results were compared with previous ones. The questionnaire had 2 parts; demographic characteristics and knowledge. Data from 197 respondents were analyzed by IBM-SPSS-Statistics 22 programme with using descriptive statistics and Fisher's Exact chi square tests with significance level $p<0.05$.
Results: 165 female and 36 male students(mean age 19.48±1.27 years) were attended to dental trauma seminar. While evaluating the answers, were seen that in crown fracture cases after the seminar students could significantly better differentiate permanent and primary teeth from each other. Replantation of avulsed tooth was significantly higher degree answered truly in the second questionnaire by both gender. And milk was the most preferred transport solution during trauma case as an answer($p=0.001$).
Discussion: According to different studies teaching of dental traumatology had an important effect to raise medical students' , teachers and sport faculty students awareness and familiarity with managing dental injuries.
Conclusion: After the seminar both knowledge level and awareness of students about dental trauma significantly increased. To improve the quality of teamwork in dental service, it is recommended to add dental trauma lessons into the curriculum.

Luxation injury risk factors in the Croatian pediatric population – a retrospective study

Lea,Budak[1];Tea,Burić[1];Dubravka,Negovetić Vranić[1]
[1]School of Dental Medicine, University of Zagreb

Lea Budak[1], Tea Burić[1], Dubravka Negovetić Vranić[1]
1 - School of Dental Medicine, University of Zagreb, Gundulićeva 5, 10 000 Zagreb, Croatia

Aim: This study aimed to assess various risk factors related to dental luxation injuries in the pediatric population of Croatia.

Materials and Methods: The study was conducted at the Department of Pediatric Dentistry, School of Dental Medicine, University of Zagreb. A total of 556 patient charts with a history of dental trauma were found over an 8-year period. Risk factors such as soft tissue injuries, circumstances of injury (activity-related or not), and the number of simultaneously injured teeth were recorded for all luxation injury types (concussion, subluxation, extrusion, intrusion, lateral luxation, and avulsion).

Results: Logistic regression was analyzed to assess risk factors for luxation injuries. The Odds ratio and confidence interval were calculated for each variable. All luxation injury risks were compared to subluxation as the least serious luxation injury presented in this study. Activity-related teeth subluxation occurs two times more often than an intrusion. If soft tissue injuries are present, extrusion is 3.7 times more likely, avulsion 5.5 times, and lateral luxation 6.4 times more likely to occur. Multiple simultaneous teeth trauma raises the risk of lateral luxation 8.9 times, but if only one tooth was traumatized lateral luxation is 3.7 times more probable than subluxation.

Discussion: Injuries that present more dramatically, including soft tissue and multiple teeth injuries, increase the risk of more serious luxation injuries such as avulsion, lateral luxation, extrusion, and intrusion.

Conclusions: There are various statistically relevant risk factors for luxation injuries in the pediatric population in Croatia with emphasis being on activity-related or multiple teeth injuries, and ones including soft tissues. Major risks for serious injuries need to be addressed properly.

The authors declare no conflict of interest.

THE CHARACTERISATION OF PERMANENT TOOTH SEQUELAE/DEFECT TYPE IN INTRUSION-TYPE TRAUMAS EXPERIENCED IN THE PRIMARY DENTITION

Oguzhan,Karayel[1];Halenur Altan[1];Alem,Cosgun[2]
[1]Necmettin Erbakan University, Department of Pedodontics
[2]Tokat Gaziosmanpasa University, Department of Pedodontics

Keywords: Dental Trauma, Intrusion, Primary Teeth, Spontaneous Eruption

THE CHARACTERISATION OF PERMANENT TOOTH SEQUELAE/DEFECT TYPE IN INTRUSION-TYPE TRAUMAS EXPERIENCED IN THE PRIMARY DENTITION
Halenur ALTAN1, Alem COŞGUN2, Oğuzhan KARAYEL1
1Necmettin Erbakan University, Department of Pediatric Dentistry, Konya, Türkiye
2Tokat Gaziosmanpasa University, Department of Pediatric Dentistry, Tokat, Türkiye

Aim: The aim of our study is to examine the complications that may occur due to trauma in the permanent teeth of children who were exposed to intrusion-type trauma in the primary dentition.
Materials and Methods: In this multicentre study, 151 patients who experienced trauma to their primary teeth between January 2018-October 2023 were examined. Radiographs (periapical, panoramic and tomography) taken on the day of trauma and on the control date were examined, and patient forms were filled in according to the information in the archive. Intraoral photographs were taken from the trauma area. Data were evaluated using Jamovi statistical software by correlation and chi-square tests.
Result: 5(%42) out of 12 patients were severe intrusion cases. In 5(%42) cases there were defects/changes in permanent teeth. Most common one was enamel opacities/hypoplasia (%25). There was a high-level correlation between follow-up time and complications presence (r=0.741). There was no statistically significant difference between treatment types and complications presence (p=0.079).
Discussion: Literature shows that intrusion injuries in the primary dentition are the most problematic type of trauma for permanent teeth under. In this study, high percentage of teeth(%42) were observed to have one or more defects. Spontaneous eruption advised as first treatment option in intrusion trauma, and in our study %67 of them were successful.
Conclusion: It is important to follow-up on traumatized teeth for long period of time because they may cause complications even after many years. As advised as the first treatment option spontaneous eruption could prevent complications to the permanent teeth.
Conflict of interest: The authors declare no conflict of interest.

Understanding extra-oral dry time in relation to tooth avulsion – An exploratory review

Garima,Jhunjhunwala[1];Nitesh,Tewari[1];
Vijay,Mathur[1];Morankar,Rahul[1];Kalpana,Bansal[1]
[1]CDER, AIIMS, New Delhi

Keywords: Dental Trauma; Tooth Avulsion; Traumatic Dental Injuries; Extra Oral; Prognosis

Aim:
To understand the correct interpretation of extra-oral dry time in different studies related to tooth avulsion

Materials and Methods:
An a priori protocol as per the best practices of evidence-based medicine was formulated and registered in PROSPERO. A comprehensive search was performed in PubMed, LILACS, Web of Science, EMBASE and Scopus without any limitations on 1st January 2024. The selection was conducted in two phases. First, the duplicates were removed and title and abstract were screened as per the selection criteria. Later scrutiny of the full-text articles was performed. Review included all types of articles related to tooth-avulsion. Data related to the descriptors used for defining the extra-oral dry time and its definition was extracted and analysed.

Result:
The database search revealed 4414 records. Duplicates were removed and 2635 records were screened to yield 128 full-text articles. A total of 95 studies were finally included in the review. Among the included studies, 62 were case reports, 3 were case series, 20 were retrospective studies and 10 were prospective studies. The terminologies that had been used in the included studies were extra-alveolar dry time, extra-oral dry time, dry time, storage time. Majority of articles did not use these terminologies while describing the tooth avulsion. Few of the studies have clearly defined storage time and wet time. However, there was a lack of clear understanding of the definition of these terminologies.

Discussion:
According to IADT guidelines 2020, management and prognosis of an avulsed tooth is dependent on the duration of extra- alveolar time. However, the term is subject to different interpretations that might affect appropriate description and management.

Conclusions:
A lack of consensus was observed for the description of extra-alveolar time. It is important that future researchers develop a consensus document for standardized description of tooth avulsion and its reporting.

Education in Dental Traumatology: the development of a self-paced online learning tool for undergraduate dental students including gamification features

Isabel,Olegario[1];Rona,Leith[1];Anne,O'Connell[1]
[1]Trinity College Dublin

Keywords:dental traumatology, educational research, gamification

Clinical and didactic teaching of Dental Traumatology (DT) within the undergraduate curriculum is often delivered by different disciplines, with restricted teaching time and limited direct clinical exposure to emergency traumatic management. This may be a factor in the lack of confidence reported among dentists in managing dental trauma.

Aim : To develop a self-paced online learning tool that includes novel learning strategies in DT for undergraduate dental students that will augment existing teaching opportunities during clinical training.
Materials and Methods: The online course was designed and programmed in the Edapp® platform that is supported by the United Nations Institute for Training and Research (UNITAR). Learning strategies used include gamification features, case-based learning and microlearning. Selection of the essential topics was based on an international online survey in DT Topics and merged into different lessons. Course content was based on the latest IADT guidelines, Dental Trauma Guide and scientific articles.
Results: A total of 7 lessons were created (1.Terminology; 2.Dental Trauma Index;3. Examination and Special Tests; 4.Trauma Splint; 5.Uncomplicated Crown Fractures; 6.Complicated Crown Fractures; 7.Avulsion of Permanent Teeth). The gamification features include questions/quizzes, stars, scores, points, leaderboard, brainboost and rapid refresh. Clinical photographs, intra-oral radiographs and videos were selected with consent for case-based learning in each lesson. A pre and post-course questionnaire was designed to evaluate course effectiveness. It included 18 multiple-choice questions (MCQs) with different levels of difficulty which were designed and developed by specialists in Paediatric Dentistry and Endodontics. Content clarity, readability, sequence, quality of images and videos were deemed acceptable. A total of approximately 8 hours of self-paced learning is expected to complete the course.
Conclusion : The addition of a self-paced online course in DT may be used to overcome challenges in curriculum structure in undergraduate education. The incorporation of novel strategies such as gamification features, case-based learning and microlearning is being evaluated to see if it enhances the student experience in DT education.

*The authors declare no conflicts of interest.

FOLLOW-UP OF DENTOALVEOLAR DEVELOPMENT OF CHILDREN AFTER PRIMARY TOOTH AVULSION AND POSTTRAUMATIC ATTITUDE OF PARENTS

Ahsen,Akpinar[1];Halenur Altan[1];
Merve,ABAKLI INCI[1];Hazal,OZER[1];
Yasemin Derya,FIDANCIOGLU[1]
[1]Necmettin Erbakan University Department of Pediatric Dentistry

Aim: This study aims to evaluate the attitude of parents and changes in dentoalveolar development of children after primary tooth avulsion (PTA).
Materials and Methods: A post-PTA evaluation form was prepared in our clinic. 163 patients who experienced trauma to their primary teeth between January 2018 and October 2023 were examined. The form was applied to 12 out of 20 patients who underwent PTA between January 2019-2024. The questions were asked about the demographic informations(gender,age), tooth transportation storage, the reason for avulsion, bone loss, etc. were investigated. Intraoral photographs, periapical and panoramic radiographs were obtained. Data were evaluated Jamovi using descriptive analysis, correlation and chi-square test.
Results: The rate of ectopic eruption of permanent teeth after trauma was 8.3%. At the follow-up appointment and intraoral photographs, alveolar bone loss was seen in 16.7% of the patients. The rate of attendance to follow-up appointments was 75%. There is a positive correlation between the way the tooth is transported and the level of knowledge of the parents (r = 0.728).
Discussion: Parents' knowledge and attitudes about PTA were evaluated. It was observed that as the knowledge level of the patient's parents increased, their level of knowledge about PTA increased, while no change was observed in the rate of attendance to follow-up appointments. PTA affected the dentition in children whose permanent teeth were close to eruption. This situation increases the importance of follow-up of PTA at younger ages.

Conclusion: As the level of trauma knowledge increases, it is predicted that the rate of right tooth transportation will increase. The level of knowledge should be increased by raising awareness of parents and teachers.

Conflict of interest: The authors declare no conflict of interest.

Effect of Educational Methods on Dental Trauma Knowledge Among School Teachers: A Systematic Review

MOHAMMED,Al-NASER[1];Annapurny,Ventikeswaran[1];
Rohaida,Abdul Halim[1];Budi Asilinie,Md Sabri[1];Ahmad Fahim,Zulkifli[1]
[1]Universiti Teknology Mara

Keywords: Dental Trauma management, Dental trauma education, schoolteachers, avulsion, children dental trauma

Effect of Educational Methods on Dental Trauma Knowledge Among School Teachers: A Systematic Review

Authors: M. Gh. Al-Naser1, A. Venkiteswaran2, BA. Md Sabri3, R. Abdul Halim2, AF Zulkifli4
1. Mohammed Gh. Al-Naser: Centre of Comprehensive Care Studies, UiTM. Email: mohammed1304@uitm.edu.my
2: Annapurny Ventikeswaran: Centre of Paediatric Dentistry & Orthodontics Studies, Faculty of Dentistry UiTM. Email: annapurny@uitm.edu.my
2. Rohaida Abdul Halim: Centre of Paediatric Dentistry & Orthodontics Studies, Faculty of Dentistry UiTM. Email: dr_rohaida@uitm.edu.my
3. Budi Asilinie Md Sabri: Centre of Population Oral Health & Clinical Prevention Studies, Faculty of Dentistry UiTM. Email: budiaslinie@uitm.edu.my
4. Ahmad Fahim Zulkifli: Physical & Health Education Department, Faculty of Education UiTM. Email: fahimzulkifli@uitm.edu.my

Abstract

Aim
Schools are the second most common place that traumatic dental injuries (TDI) occur. Hence, it is important that teachers have the basic knowledge to provide first-aid care for TDI. Many studies were done to evaluate the effectiveness of teaching methods/tools of TDI on schoolteachers. This study aims to evaluate the studies that assessed various educational methods to provide TDI knowledge.

Materials and Methods
The protocol was designed based on PRISMA guidelines and registered in PROSPERO. Four electronic databases were used to search for studies which were Web of Science, PubMed, Scopus and EBSCO using predefined search strategy and keywords. CASP was used to do critical appraisal of studies and ROBINS-I was used to assess risk bias.

Results
The search yielded 1406 articles of which only 26 articles met the inclusion criteria. After analysis, only 18 articles were included. Risk of bias analysis was performed. Meta-analysis was not carried out as it was not possible to pool the data

Discussion
The studies used numerous questionnaires for knowledge determination and they were divided into avulsion and reimplantation knowledge and dental trauma knowledge. Twelve studies used lecture/presentation, six studies used printed material, two studies used audio-visual tools, and one study used a phone application. Post-intervention questionnaires were given at different intervals and different frequency. All the studies showed increased in knowledge after delivery of TDI education.

Conclusion
This study showed various tools of TDI education increased the knowledge of schoolteachers, hence training for TDI must be given to schoolteachers and a standardized module for TDI should be designed addressing knowledge retention and skills of schoolteachers.

Keywords: Dental Trauma management, Dental trauma education, schoolteachers, avulsion, children dental trauma

Conflict of interest to disclose: None

Funding for this project: None.

Challenges In Managing Dental Trauma Cases In Non-Hospital Based Clinical Settings: A Qualitative Study

Annapurny,Venkiteswaran[1];
Mohammed Gh.,Al-Naser[1];
Rohaida,Abdul Halim[1]
[1]Universiti Teknologi MARA

Keywords: Focus group, dental trauma, challenges

Introduction: A timely and proper management of a traumatized tooth determines the prognosis and survival of the affected tooth. As dental injuries often occur at school or home, the patient is usually rushed to the closest medical or dental clinic. Hence, the ability of the personnel to manage such cases is important. However, the dentists face many challenges in their quest to manage dental trauma and these issues often lead to poor management and late referrals.

Objective: To determine the current practices and challenges faced by dentists in non-hospital based settings when dealing with dental trauma.

Methodology: A focus group discussion (FGD) was conducted with participation from representatives among general dentists across Malaysia. Random selection was done based on the registry of Malaysian Dental Association (MDA). A structured FGD was conducted online where an in-depth discussion regarding challenges of dental trauma management was initiated. Participants were encouraged to share their experiences and strategies used in addressing these challenges.

Results: Thematic analysis revealed the following issues: i)variations in training module during undergraduate studies, ii)lack of awareness among patients, iii)biomaterials are expensive, iv)not aware of latest guidelines, v)patient anxiety and vi)inability to discuss treatment plan with specialist.
Conclusion: This study highlights the various challenges faced by dentists in non-hospital based clinical settings when managing dental trauma. These findings underscore the importance of patient education, training programmes and proper communication channels to enhance the overall management and treatment outcomes.

TEMPORAL TRENDS AND PRESENTING CHARACTERISTICS OF SEVERE PERMANENT TOOTH INJURIES AT A PEDIATRIC HOSPITAL OVER A 5-YEAR PERIOD

Edward,Barrett[1];Poonampreet,Sekhon[1]
[1]Private Practice

Keywords: Epidemiology

Background: Children commonly present to hospital emergency departments (ED) for dental concerns and dental trauma is often a frequent complaint. Many studies have observed a decreasing trend in dental trauma presenting to the ED.
Objectives: To determine if the incidence of severe permanent tooth trauma presenting to an ED in a pediatric hospital has changed over a 5-year period, in addition to investigating seasonal variations in time, etiology and location of injury
Methods: A retrospective chart review was conducted of patients that presented for permanent tooth trauma to SickKids ED between January 1, 2011 and December 31, 2015. Information regarding patient demographics (gender, age and postal code), injury time, location of injury, etiology, tooth number, diagnosis and treatment rendered were collected for patients with severe permanent tooth injury.
Results: A total of 2080 patients presented to the ED for dental concerns over the 5-year period. 371 (18%) had permanent tooth trauma, and 198 (9.5%) severe trauma. Males were more commonly affected (2:1) and the patients average age was 11.6±3.10 years. Maxillary central incisors were the most affected teeth. Avulsions comprised majority of the injuries (30%), followed by complicated crown fractures (25%), lateral luxations (18%), extrusions (15%), intrusions (9%) and horizontal root fractures (3%). When looking at trends, permanent tooth trauma showed a statistically significant decrease over the 5-year period ($p<0.05$), however the subset of severe injuries remained the same ($p>0.05$). Seasonal variations were noted in time, etiology and location of injury.
Conclusions: Trends in severe permanent tooth trauma presenting to the ED shows no change over the 5-year period, implying that EDs are often relied upon to evaluate and treat complex dental injuries.
Significance/Impact: Hospitals and practicing dentists can utilize this information to allocate resources appropriately, identify barriers in access to care and effectively educate parents and treating dentists.

Risk Factors for Traumatic Dental Injuries Among Children and Adolescents

Mariam,Alkheder[1,2];Udochukwu,Oyoyo[2];Samah,Omar[2]
[1]Kuwait University
[2]Loma Linda University

Keywords: Transmitted-light plethysmography, pulpal circulation, horizontal root fracture, young permanent teeth

Authors:
Mariam Alkheder, DDS, MS. Kuwait University, Loma Linda University
Udochukwu Oyoyo, MPH. Loma Linda University
Samah Omar, DDS, MSD, FAAPD, FIADT. Loma Linda University

Aim:
To report the prevalence, demographics, and risk factors of Traumatic Dental Injuries (TDI) among children and adolescents who presented to Loma Linda University Emergency Department.

Materials and Methods:
Charts of patients one - 16 year-old were reviewed and the following data were collected: age, gender, weight, medical history, type of trauma, teeth involved, and place and cause of trauma. Healthy weight, underweight, and overweight/obese children were identified using the Center of Disease and Control (CDC) growth charts according to age and gender. Statistical analyses included standard descriptive and inferential data analysis for all variables. ANOVA tests and Chi-square analysis were used to study the effect of weight, gender, and age on risk of TDI. Significance level was set at $P<0.05$.

Results:
A total of 829 charts were included in the final analysis. A total of 693 permanent teeth sustained trauma compared to 530 primary teeth. Root fractures were least experienced in both the primary and permanent dentition. Crown fractures were most notable in permanent teeth compared to luxation, observed more in primary teeth. Significantly higher incidence of TDI were found in males (66%) and adolescents (52.5%). The cause of trauma was significantly associated with ethnicity and age. No significant association found between TDI and weight among our sample.
Discussion: TDIs are considered one of the most common oral health problems in children and adolescents, having significant negative impact on children and their families. Identifying factors increasing the risk of TDIs will aid in implementing targeted preventive strategies to high-risk groups.

Conclusion:
TDI are more likely to be associated with adolescent males. Obesity and overweight were not risk factors for dental trauma. Falls, biking, and sports were the most common causes of trauma among our sample.

Conflict of Interest:
The authors have no conflicts of interest to declare.

Treatment Outcomes in Regenerative Endodontics: What Do We Measure and How Good Are We?

Amir,Azarpazhooh[1,2]
[1]Faculty of Dentistry, University of Toronto
[2]Department of Dentistry, Mount Sinai Hospital

Keywords: Treatment Outcomes; Regenerative Endodontic Treatment; Evidence-Based Endodontics

Defining important and meaningful treatment outcomes is critical for any healthcare discipline. Endodontic treatment outcomes have been defined in various ways over the past few decades. However, innovative regenerative procedures are continuously evolving to benefit contemporary endodontics. Consequently, the investigated outcome measures may still lack homogeneity. This presentation will critically review the current state of the best available clinical evidence to determine the treatment outcome of regenerative endodontic procedures for immature permanent teeth with pulp necrosis and identify gaps in our expertise at the present stage of regenerative endodontics.

EVALUATION OF TRAUMATIC DENTAL INJURIES WITH A NEW STANDARDIZED INDEX, THE EDEN BAYSAL DENTAL TRAUMA INDEX

Aysenur,Cetin[1];Hazal Ozer[1];Merve,Abakli Inci[1];
Yasemin Derya,Fidancioglu[1];Halenur,Altan[1]
[1]Necmettin Erbakan University

Keywords: Dental trauma, Eden Baysal Dental Trauma Index, Tooth fractures, Traumatic dental injuries

Aim
The aim of this study is to introduce the Eden Baysal Dental Trauma Index (EBDTI) and demonstrate its use in Traumatic Dental Injuries (TDI).
Materials and Methods
The study included 112 patients between the ages of 1-16 years who were admitted to our clinic in 2021-2024 due to dental trauma. Radiographs and pedodontic trauma forms of the patients were examined by two different researchers. The data obtained were categorized according to a new index, EBDTI.Data were evaluated Jamovi statistical software using descriptive analysis.
Results
172 teeth of 112 patients were evaluated. According to EBDTI coding, the following results were obtained: The most traumatized tooth was number 51 (26.7%). The most common type of trauma was 00Lm- (lateral luxation with mature apexed crown root and no alveolar bone injury) (15.1%). The most common location for root fractures was 2 (middle 1/3) (1.7%). The most common periodontal injury was L (lateral luxation) (19.8%).
Discussion
EBDTI is a code system that provides a standardized classification of TDIs. The study involved the transfer of 172 traumatized dental records into this web-based classification. EBDTI is based on Andreasen's classification and includes root maturity and other associated injuries. The index consists of FDI (x) coding followed by 5 steps: crown injury, root injury, luxation injury, root development status and bone injury.
Conclusions
TDI are injuries with a high prevalence. It is associated with many factors such as age, gender and stage of tooth development. With EBDTI, TDIs can be easily and reliably transferred to a web-based system.
Conflict of Interest
The authors declare no conflict of interest.

Poster Case Competition

Conservative management of a mid-root horizontal fracture in anterior tooth

Sun,Hantang[1];Niu,Xuewei[1];Wang,Shuang[1];
Wang,Xiaotong[1];Cao,Tianyi[1]
[1]Affiliated Nantong Stomatological Hospital, Nantong University

Keywords:anterior tooth, mid-root horizontal fracture, conservative management

Aims: To preserve a mid-root horizontal fractured anterior tooth through conservative managements.
Case presentation: Traumatized tooth 11 of a 23-year-old male patient was referred to our hospital. Normal color and positive response to electric pulp test were found, while palpation discomfort, 1mm occlusal displacement and grade one mobility were also revealed. Two horizontal fracture lines in middle-third of the root without obvious dislocation were revealed by radiograph. Tooth 12, 11 and 21 were splinted with composite-resin, occlusal relationship was adjusted and follow-up examinations were performed. In the 3rd-month examination, the fracture lines were thin and unclear. In the half-year examination, a higher density between the fracture lines was found. One year later radiographic examination revealed more calcified density between the fracture lines with rounding of the corners of the apical and coronal fragments at the fracture lines level. At the 2-year examination, radiographic view of the tooth showed calcification of pulp but the fracture lines were still visible, tooth 11 showed good function, so the splint was removed. At the 3-year examination, the fracture lines had become almost invisible, and the root canal was totally obliterated, tooth 11 showed normal color with positive response to electric sensitivity test and good function.
Discussion: Key points for the recovery of fractured teeth are the maintenance of epithelial attachment and conservation of pulp vitality, so timely repositioning and fixation of the coronal segment are necessary.
Conclusion & Clinical Relevance: Young patients' anterior teeth with mid-root horizontal fractures can be conservatively managed by correct diagnosis, timely repositioning, fixation and periodical follow-up, which can result in satisfactory treatment outcomes.
Conflicts of interest: none.

A case of intentional reimplantation of a tooth with vertical root fracture due to trauma

Katsuhiro,Asaka[1,2]
[1]Nihon University Matsudo Dental Hospital Adjunct Lecturer
[2]Clinical Implant Society of Japan

Keywords:vertical root fracture

Katsuhiro Asaka
Nihon University Matsudo Dental Hospital Adjunct Lecturer, Clinical Implant Society of Japan
If there is a vertical root fracture, the prognosis is judged to be poor, and the tooth is often extracted. Due to the young age of the patient in this study, we report that we have preserved the teeth by orthodontics and intentional reimplantation without extraction, and obtained good results.
The patient was a 24-year-old woman. The first visit was on February 6, 2016. The chief complainant came to the dental clinic because she was concerned about the bad alignment of her teeth. The molar occlusal relationship was angle class III, and the midline was deviated to the left side. The anterior teeth 11, 21, and 22 were inactivated and undergoing restorative treatment. Orthodontic treatment was performed as a treatment plan, and root canal treatment was performed on the anterior teeth 11, 21, and 22. Root canal treatment using a microscope confirmed perpendicular root fracture in 21 and perforation in 22. 11, 21, 22 root canal fillings were performed. 21 confirmed a vertical fracture line, so intentional replanting was performed. After tooth extraction, the fracture line was repaired with Super Bond and returned to the extraction fossa with Emdogain. 22 performed perforation repair at MTA Cement. Tissue sculpting was performed at the Provisional Restoration. After confirming that there were no symptoms, we moved on to final restoration. It is currently being maintained, but there is no problem. In this study, it was suggested that the tooth can be preserved if an appropriate occlusion is given and appropriate treatment is performed for vertical root fractured teeth. There is no conflict of interest in this report.

Managing Crown-Root Fracture in Young Patients: A Two-Case Report

Alzaabi,Badriya[1];Aysha,AlSaif[1];
Sherifa,Almukhaizeem[1]
[1]Kuwait Board in Paediatric Dentistry

Keywords: Crown root fractures, root submergence

Aim: To describe the different approaches used to manage Crown-root fracture (CRF) in two young patients with immature permanent central incisors.

Case Presentation:
Two healthy boys aged 8- and 9-years presented with a history of dental trauma and a broken tooth. There was an oblique crown fracture extending to the coronal third of the root in both cases. The first case involved a supra-periosteal fracture line, while the second case had a sub-periosteal fracture line with pulp involvement. Management of both cases included removal of the coronal fragment, followed by different treatment approaches. In the first case, gingivectomy and composite restoration were performed. In contrast, the second case underwent root canal treatment with calcium hydroxide for two-weeks, followed by root submergence. Then, a removable appliance with a pontic replacing the fractured tooth was provided. The Follow-up after 6- and 8-months revealed good aesthetics and function; however, close follow-up is planned to monitor any complications.

Discussion:
The location of the fracture line plays a significant role in determining the complexity and prognosis of the treatment. Sub-periosteal fracture lines require more complex treatment, and the aim is to preserve the alveolar bone for future prosthesis through root submergence, which has reported high success rates of over 90% in children. In contrast, for supra-periosteal fracture lines, the aim is to preserve pulp vitality and improve tooth restorability, which was achieved by exposing the fracture line before restoring it.

Conclusion:
Despite the challenges in managing CRF, efforts must be made to preserve teeth and alveolar bone in young, growing patients to maximize their future restorative options. Tailoring each patient's treatment plan is crucial to achieving the best possible outcome.

The authors declare no conflict of interest.

Repositioning and retaining significantly displaced teeth. A case report demonstrating how multidisciplinary management can optimise outcomes.

Mahmud,Ayla[1];Harman,Kaur[1];Mital,Patel[1];
Nahal,Razaghi[1];Ama,Johal[1];Simon,Holmes[1];Tulsi,Patel[1]
[1]Royal London Dental Hospital

Authors: Ayla Mahmud (1), Harman Kaur (2), Tulsi Patel (3), Nahal Razaghi (4), Ama Johal (5), Simon Holmes (6), Mital Patel (7)
1,2,3 – Restorative Dentistry DCT
4 – Restorative Dentistry StR
5 - Professor of Orthodontics
6 - Professor of Craniofacial Traumatology
7 - Consultant and Honorary Senior Clinical Lecturer in Restorative Dentistry

Institution: Royal London Dental Hospital

Aims: This case demonstrates how collaboration between maxillofacial surgeons, orthodontists and restorative dentists has allowed the patient to retain nearly all of their teeth 10 years after severe and complex luxation injuries.

Case presentation: A 34-year-old female presented with complicated dento-alveolar injuries following a road traffic accident. All maxillary anterior teeth were severely displaced and sitting lateral to the nasal cavity. Loss of these would cause substantial horizontal and vertical bone defects. Maxillofacial and restorative teams collaborated to reposition the teeth and undertake endodontic treatment. Following initial healing fixed orthodontic realignment was undertaken to optimise tooth position. All teeth survived, except UL2 which showed inflammatory root resorption. Restorative treatment concluded with completion of endodontic treatments, UL2 replacement with an adhesive bridge and composite bonding. The patient remains stable and happy after 9 years with only one tooth lost.

Discussion: Severe luxation injures can cause devastating physical and psychological consequences. In this case, loss of the teeth or not repositioning them would have resulted in extensive horizontal and vertical bone loss. Implant rehabilitation would have been challenging and the patient would have had a poor aesthetic outcome. By saving the teeth, potentially extensive and invasive treatment was avoided in the short/medium term and has potentially reduced complexity of subsequent fixed prosthodontics.

Conclusion: Carefully planned multidisciplinary management of extensive dento-alveolar trauma injuries can preserve hard and soft tissues, prolong the dentition, and reduce treatment burden.

Authors have no conflicts of interest.

CASE REPORT OF AVULSION INCISOR REPLANTED AFTER 2 HOURS

Alqudaimi,Shatah[1]
[1]security force hospital, riyadh. KSA

Keywords: tooth, avulsion, ankylosed

Aim: Case report describes management of an avulsed permanent central incisor.

Case report: An 8-year-old male, reported to the dental department of SFH with a history of oral trauma due to a fall at school which resulted in an avulsion tooth # 11. The child presented with her mother after 2 hours of the injury with the tooth having been stored in evaporated milk capsule since the time of the injury.
After anaesthetising the area, tooth #11 was replanted back into the socket with slight digital pressure. Position was verified clinically and radiographically. The tooth was stabilised for 14 days with a flexible wire composite etch splint. Follow up after 1-year, tooth become ankylosed.

Discussions: An avulsed permanent tooth with dry time longer than 60 min has a poor long-term prognosis. The periodontal ligament cells (PDL) become necrotic and are not expected to heal leading to disappearance of PDL space. This results in union of alveolar bone and root surface, the process known as dentoalveolar ankylosis or replacement resorption. Replacement root resorption is more progressive and faster in a growing child. However, in an ankylosed tooth, the vertical growth of the alveolar process will not occur in the absence of PDL resulting in infraposition of the tooth.

Conclusions: Despite ankylosis, the aesthetic, low-cost treatment was well accepted, and the patient's quality of life was improved until definitive treatment can be performed.

As health care providers, we have to do awareness among parents, school teachers and child care providers about management of avulsion teeth since time factor is critical to avoid ending with more complicated root condition
There is no conflict of interest regarding the case .

Minimally Invasive Management of Complicated Crown Fractures in Paediatric Patients: A Case Series Utilising Bioceramic Putty Partial Pulpotomy and Coronal Restorative Techniques

Faridoun,Anfal[1,3,4];Amer,AlAnezi[2,3,4]
[1]Kuwait Board in Paediatric Dentistry
[2]Kuwait Board of Endodontics
[3]Kuwait Institute for Medical Specialisation
[4]Ministry of Health

Keywords: Complicated Crown Fracture, Pulpotomy, Children

Aim: To present the application of partial pulpotomy using bioceramic putty (BC-putty), alongside immediate coronal restoration using preformed celluloid crowns (PCC) or reattachment of crown fragments, in the management of complicated crown fractures (CCF) of anterior permanent teeth in paediatric patients.
Case Presentation: Four anterior permanent maxillary teeth, with 2/3 to complete root development and varying degrees of CCF, in four children with a mean age of 9.5 years, underwent partial pulpotomy treatment. Calcium silicate bioceramic (TotalFill® BC RRMTM Fast-Set Putty) was used, followed by composite restoration using PCC (SweDent®) for three teeth, while one tooth was sealed by adhesive bonding of crown fragment. After a mean follow-up period of 19-months, satisfactory aesthetic and functional outcomes were reported by the children. Teeth responded positively to sensibility tests, with no pain upon percussion or palpation. Radiographically, evidence of continued root development or apical root closure was observed, with no signs of periapical pathology.
Discussion: Partial pulpotomy represents a promising minimally invasive treatment approach for CCF teeth, aiming to preserve pulp vitality and facilitate ongoing root development and apical closure, ensuring long-term tooth survival and function. However, children who have suffered dental trauma often experience anxiety, making it important to manage their dental health with quick and efficient procedures utilising the most appropriate materials. BC-putty presents a promising option due to its ease of application and lack of need for mixing, unlike other BC. Additionally, PCC or fragment reattachment techniques can deliver aesthetically pleasing results while saving significant time. Incorporating these strategies can improve the quality of care for children with dental trauma while minimising the associated anxiety and discomfort.
Conclusion & Clinical Relevance: This case series demonstrated a 100% clinical and radiographic success rate with BC-putty partial pulpotomy, combined with the employed coronal sealing techniques, yielding satisfactory aesthetic outcomes.

Authors declare that there is no conflict of interest related to the presented content and certify obtaining appropriate patient consent forms.

Impacted canines in autotransplantation

Marandi,Dagmar[1]
[1]Meliva Kaarli Dental Clinic

Keywords: Estonia, autotransplantation, impacted canines

Aim
Autotransplantation of teeth (ATT) offers a biological approach to tooth replacement in children. This method is an alternative in young patients instead of implants. Replacing impacted and malpositioned canines is a big challenge to surgeon and orthodontist. Studies of Gonnissen H et al. and Patel S et al. reported success rates 38-58% and Hunt et al. to 74 % assessed after more than 10 years along with high patient satisfaction. The aim of my case presentation is to 1) describe how digital dentistry helps to improve preoperative planning by 3D tooth patterns to reduce operative time and 2) the complications related to ATT.
Case Presentation
My case presentation analyses some difficult ATT procedures which involve impacted upper and lower canines in very difficult impaction positions. Almost all ATT procedures were performed with patient specific replica of donor tooth. I discuss preoperative planning with CBCT, postoperative complications, how 3D replicas help to reduce extra-oral time and events during follow-up.
In my cases upper canines were impacted in horizontal position and lower canines were bilaterally impacted or impacted due to odontoma. All teeth were transplanted when root development was almost complete and no endodontic treatment was done prior to transplantation. According to guidelines for root development stage during ATT root canal treatment was done postoperatively.
I present 12.y old girl with impacted upper canine whose treatment with orthodontical extrusion failes and then was done ATT, also 14.year old boy who has d 23 ATT and follow-up 6 years. In mandibular cases is interesting 12.y old girl with odontoma and her follow-up is 8 years.
Discussion
Upper canines play an important role in supporting upper lip, in achieving good facial and smile line aesthetics and they are important in dentition formation. However, there are still undesirable complications as external root resorption or tooth ankylosis. There are many factors that influence the results.
Conclusion
The aim of this case report was to demonstrate the aligning of an extremely displaced canines. Because of the aesthetic and functional importance of the upper canines, autotransplantation is an alternative treatment opportunity. The most relevant complications in autotransplantation affects the success rate are resorption and ankylosis of the transplanted tooth. Therefore the surgery offers a lot of challenge in this.

An Unusual Sequela of a Lateral Luxation Injury – A Case Report

Almohammed,Fatemah[1];Aysha,Alsaif[1];
Sherifa,Almukhaizeem[1]
[1]Kuwait Board in Paediatric Dentistry.

An Unusual Sequela of a Lateral Luxation Injury – A Case Report
F.Almohammed, S.Almukhaizeem, A.Alsaif
Kuwait Board in Paediatric Dentistry, Kuwait Institute for Medical Specializations, Kuwait.

Aim: To report an unusual sequela of a lateral luxation injury in a young permanent incisor subsequent to the recommended splinting duration by the International Association of Dental Traumatology (IADT).

Case Presentation: A healthy 10-year-old girl had a traumatic dental injury (TDI) due to a collision with her friend's head. Clinical and radiographic examination revealed teeth 21 and 22 had been displaced laterally in the palatal direction and an apical-root fracture on tooth 11. Management was initiated within a few hours of the injury, following the IADT guidelines, including manually repositioning and splinting the traumatized teeth with a flexible splint for four-weeks, followed by root-canal treatment of the non-vital teeth 21 and 22. Good esthetics and function were observed during 2-, 4-, and 6-week follow-ups; however, during an 8-week follow-up, a 2mm occlusal discrepancy of the laterally-luxated teeth was noticed.

Discussion: Luxation injuries can lead to various complications, including pulp necrosis, canal obliteration, and root resorption. IADT recommends immediate management, as if treatment is not initiated immediately or is delayed for several days, repositioning may become challenging due to the formation of a clot in the socket. In this patient, the TDI was successfully treated within a few hours, but after four-weeks of stabilization, the luxated teeth experienced ~2mm relapse. This could be due to bone remodeling following this crushing injury. Therefore, orthodontic repositioning is required, but it is recommended after six months to allow the periodontal ligament to heal, as per the current orthodontic management guidelines for teeth with a history of TDI.

Conclusion: Despite careful management of TDI, unexpected complications might happen; therefore, a close follow-up is mandatory for a good long-term prognosis of teeth with a history of TDI.
The authors declare no conflict of interest.

Advanced Revitalization Protocol Utilizing Laser, Cold Atmospheric Plasma, and PRF for Rescuing an Immature Necrotic Incisor with PAI Score 5: A Three-Year Controlled Case Report

Holscher,Christian[1,2,3,4]
[1]College Medical
[2]DGET
[3]DGZ
[4]Kiantu: Center for Regenerative and Innovative Dentistry

Keywords:dental pulp necrosis; dental trauma; pulpitis; revitalization; regenerative endodontics; root canal obturation; plasma; laser

Objective: This study aims to evaluate the efficacy of a combined treatment approach involving laser cavitation (Sweeps), cold atmospheric plasma (CAP), and platelet-rich fibrin (I-PRF+A-PRF) in the revitalization of a necrotic immature incisor with a large periapical lesion (PAI 5).

Case Presentation: A 12-year-old female patient presented minor complaints and a buccal fistula associated with her first left incisor. The diagnosis revealed pulpal necrosis and symptomatic apical periodontitis due to a dental trauma suffered four years prior (concussion and crown fracture). Revitalization procedure adhering to established guidelines. It spanned two appointments and included various stages adhering to established guidelines: access cavity preparation under rubber dam isolation, electronic (Root ZX) and visual (Microscope) determination of working length, removal of necrotic pulp, irrigation (3% NaOCL, 17% EDTA), application of Sweeps and CAP and placement of intracanal medicament (TAP) for 10 days followed by PRF and MTA.The patient remained symptom-free with resolved fistula and without tooth discoloration. Positive responses were observed albeit slightly delayed compared to adjacent teeth. Radiographic assessments over a 6 to 36-month follow-up period demonstrated successful apical healing, indicating potential success in revitalization.

Discussion: The combination of CAP and Sweeps facilitated efficient root canal cleaning, culminating in successful revitalization using advanced PRF scaffold techniques. Although vitality assessment via cold or electric pulp tests exhibited delayed responses, the radiographic evidence showcased rapid resolution of the large apical periodontitis. While prospects for further root development or apical closure remain uncertain, clinical and radiographic signs suggest a promising indicator of successful revitalization.

Conclusion & Clinical Relevance: This single-case study, with a 3-year follow-up, underscores the promising outcomes of this advanced technique in revitalizing immature teeth with large periapical lesions. It encourages further research and refinement of clinical protocols to preserve teeth affected by such lesions through revitalization techniques.

Dental Luxation Injury Management in a Blind Football Player: A Case Report

Lynn Wei Lim,Ko[1];Aisyah,Ahmad Fisal[1];Jessica,Francis[1];Maryani,Mohamed Rohani[1]
[1]Faculty of Dentistry, Universiti Malaya, Malaysia

Keywords:visual impairment, dental trauma, effective communicaton

Aim(s):
1.Highlight successful dental trauma management in blind population.
2.Advocate for patient-centered care and effective communication.
3.Promote awareness and inclusivity in dental practice to meet diverse patient needs.
Case Presentation:
This report outlines the challenges and successful management of dental trauma in a 22-year-old Malay male with glaucoma-induced visual impairment. The tooth 21 sustained extrusive luxation and an uncomplicated fracture on the disto-incisal aspect during a blind football game. Clinical and radiographic assessments preceded careful repositioning and splinting. Special consideration was given to effective communication, involving tactile and auditory cues. The patient reported minimal discomfort during the recovery period, and radiographic evaluations at follow-up appointments indicated positive signs of periodontal healing. However, the pulp became necrotic and endodontic treatment was provided. Additionally, the successful restoration of occlusal function and aesthetics was achieved. As a preventive measure, a custom sports guard was fabricated. Post-treatment care and follow-ups ensured the patient's well-being.
Discussion:
Managing dental trauma in individuals with visual impairment requires specific considerations. Despite available guidelines, the unique challenge lies in communicating diagnoses and treatment plans to a patient with visual impairment. Effective communication, using good verbal instructions, tactile aids and assistive technology proves pivotal.
Conclusion & Clinical Relevance:
This case report demonstrates the effective management of dental luxation injury in a unique population. The tailored treatment approach features dental care adaptability to diverse patient needs. It contributes to the evolving literature on dental trauma management in individuals with visual impairment and emphasizes the significance of patient-centered care in achieving positive outcomes.
Conflict of interest:
The authors declare no conflicts of interest.
(295 words)

Conservative Management of Complicated Crown Fracture: An Immediate Esthetic Rehabilitation

Xun,Chen[1,2];Xiliu Zhang[1,2];Siyuan,Huang[1,2];
Dongsheng,Yu[1,2]
[1]Hospital of Stomatology
[2] Sun Yat-sen University

Authors: Zhang Xiliu, Chen Xu, Huang Siyuan, Yu Dongsheng#
Aim(s) of the cases: Fracture by trauma is one of the most common types of dental injury in the permanent dentition. The purpose of this case report is to present the feasible and immediate restoration of a subgingival crown fracture in one patient.

Case Presentation: This article reports management of complicated crown fracture in a middle-aged adult that were successfully treated by reattachment technique. Fortunately, the broken crown was kept in pure water for 22 hours. The teeth were endodontically treated followed by esthetic reattachment of the fractured fragment using reinforced composite resin. To improve the adhesion between fractured and remaining fragment, circumferential beveling and internal groove placement were done.

Discussion: The main objective while treating such cases is successful pain management and immediate restoration of function, esthetics and phonetics. The preservation method of the broken crown, the pretreatment of the adhesive surface of the broken crown and the use of adhesive are all important factors for the long-tern success of this case.

Conclusion: We report a case of efficient recovery of a complicated crown fracture of the anterior tooth by utilizing an adequate crown rehydration process, the preparation of the broken end retaining pattern, and the use of special adhesives.

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Luxation Injuries of Immature Permanent Incisors in an Uncooperative Child: Management and Outcome

YuJie,Chin[1];Noorhidayah,Zainal Aalam[1]
[1]Faculty of Dentistry, Universiti Malaya, Kuala Lumpur, Malaysia

Keywords:lateral luxation, uncooperative child, management, outcome

Luxation Injuries of Immature Permanent Incisors in an Uncooperative Child: Management and Outcome

Yu Jie **Chin** [1], Noorhidayah **Zainal Aalam** [1]
[1] Department of Paediatric Dentistry and Orthodontics, Universiti Malaya, Kuala Lumpur, Malaysia

Aims:
1. To document a case involving luxation injuries of immature permanent teeth in an uncooperative child
2. To highlight the individualised and adapted approaches in dental management

Case presentation:
An uncooperative 7-year-old boy was referred to the Paediatric Dental Clinic, Universiti Malaya for further management of multiple dental trauma following a bicycle accident. Examination revealed intrusion of partially erupted tooth 11, lateral (palatal) luxation of partially erupted tooth 21, and laceration wounds. Following clinical and radiographic evaluation, tooth 21 was repositioned using digital pressure under painless local infiltration using computer-controlled local anaesthesia delivery and chairside behaviour guidance. Subsequently, tooth 21 was stabilised by suturing the interdental papilla. Upon a 6-month review, both tooth 11 and 21 continued to erupt into the desired occlusion, with continuous root development. However, tooth 21 presented with the radiographic sign of pulp canal obliteration.

Discussion:
A critical aspect of treating a traumatized child involves the application of effective chairside behaviour strategies. Despite the established guidelines, modification of the management of dental trauma contributes to favourable outcomes and thereby averting the need for further invasive interventions.

Conclusion & clinical relevance:
This case report highlights the criticality of implementing appropriate behavioural management techniques when an anxious child attends his first dental treatment following a dental traumatic injury. Timely and appropriately modified management of luxated teeth is crucial in determining the prognosis of immature permanent teeth, especially in mixed dentition arch.

Conflict of interest:
The authors declare no conflicts of interest.

Regenerative endodontic treatment complicated with periodontal involvement in trauma management

Jana,Vasakova[1];Daniel,Ott[2]
[1]Department of Stomatology 3rd Faculty of Medicine
[2]School of Dental Medicine, 1st Faculty of Medicine

Aim: To present trauma case report complicated with rare periodontal involvement managed with regenerative endodontics.
Case presentation: A boy aged 7,5 years came up to treatment with uncomplicated fracture of teeth 21, 31, and 32 the day after the injury, no mobility of teeth was presented. The upper tooth fragment was reattached, and the lower incisors were built up with fotocomposite resin. In three months, the boy presented swelling of the upper lip, loss of periodontal attachment, and loss of bone vestibullary. The tooth became loose and nonvital, root development was uncompleted, and root canal walls were divergent. Regenerative endodontic procedure with MTA after disinfection was performed. Soft tissue cyretage on the vestibular surface was completed, and antibiotics were prescribed. There was another trauma of the reattached tooth after 4 years and reattachment was redone. Successful root development with root canal walls thickening and prolonging was followed radiographically and with CBCT for 12 years. No further complications were developed.
Discussion: The most often used procedure for nonvital teeth with uncompleted development is apexification. Regenerative endodontics is less time consuming than apexification and provides better outcome. No root lengthening nor root canal walls thickening can be expected during apexification. Due to the process of periodontium maturation after the tooth eruption, periodontal ligaments are more prone to inflammation but luckily there is faster healing in children than in adults.
Conclusions: Reattachment is a quick, esthetic solution and can be repeated if it fails. Regenerative endodontics is the preferred option in young permanent teeth without luxatory trauma. When periodontal ligaments are involved, mechanical treatment and antibiotics are helpful.

Pulp Revascularization of an Autotransplantated Third Molar with Computer-aided Rapid Prototyping Model and Digital Technology

Chun-Chieh,Kao[1];Chien-Hung,Liu[1]
[1]Emperor esthetic dental clinic

Keywords:computer-aided rapid prototyping model, tooth autotransplantation, pulp vitality

Aim: Tooth autotransplantation is an alternative treatment option for patients with untreatable teeth that need to be extracted. It is considered the ideal treatment for tooth replacement in growing patients due to the transplanted tooth adapting to the eruption of adjacent teeth and developmental changes in the oral region. By utilizing computer-aided rapid prototyping (CARP) models of the donor tooth and surgical planning software, clinicians can prepare the recipient site with minimal tissue damage.

Case Presentation: This paper presents the case of an 18-year-old male patient who underwent tooth autotransplantation to replace his vertically root-fractured tooth 36 with an immature tooth 18. Under local anesthesia, tooth 36 was extracted after reflecting a mucoperiosteal flap, and the recipient socket was reshaped using the CARP model with preoperative virtual planning. Subsequently, tooth 18 was extracted and immediately transplanted into the recipient socket within a few minutes. The transplanted tooth was stabilized with sutures and resin-wire fixation. During the 6-month follow-up period, the transplanted tooth remained asymptomatic and functional, with normal surrounding bone density observed in radiography and positive pulp testing.

Discussion: The key factors for successful autotransplantation treatment involve reducing the extra-oral time of the donor tooth and performing accurate osteotomy to minimize surgical trauma to the recipient socket. The application of CARP models help reduce the extraoral time of the donor tooth, and pre-operative virtual planning enables less invasive bone and donor tooth preparation in a shorter surgical time.

Conclusion: This case report highlights the use of the CARP model and virtual planning to enable less invasive bone and donor tooth preparation in a short surgical time, maintaining pulp vitality, and restoring tooth function.

Is it possible to print vertical root fracture lines using a Micro–Computed Tomography System and 3-dimensional Printing Technology?

Yi-Chang,Chang[1,2];Huang,Chih-Chia[1]
[1]Cardinal Tien Hospital (An Kang District)
[2]Chang Gung Memorial Hospital (Linkou Branch)

Keywords:micro-computed tomography (μ-CT), vertical root fracture (VRF), 3D printing

One of the most frustrating complications in root canal therapy is Vertical Root Fracture (VRF) in endodontically treated teeth, posing a significant challenge for clinicians. This poster aims to demonstrate a detailed characterization of VRF using a micro–computed tomography (μ-CT) System (Skyscan 1076; BRUKER MICROCT, Kontich, Belgium). Additionally, we employ 3-dimensional (3D) printing (CMET ATOMM 4000) to create a physical tooth replica, complete with fracture lines. After a clinical diagnosis of VRF, we extracted an endodontically treated C-shaped mandibular first premolar. The tooth underwent high-resolution μ-CT scanning (9 μm). Sequential transverse sections of 9-μm μ-CT images, taken from the root apex to the cementoenamel junction, revealed that the fracture lines originated from the inner root canal at the apex. The width of the fracture line progressively increased, extending through the root canals. On the contralateral side, a second fracture line emerged. Together, the first and second fracture lines formed a C-shaped fracture line parallel to the root surface outline. Additionally, cementum tear and external root resorption were identified on the outer root surface near the apex. The second fracture lines decreased in size and eventually diminished rapidly. In contrast, the first fracture line extended all the way to the crown level. A 3D-printed replica was generated based on μ-CT images for ex vivo study. In conclusion, the development of Cone Beam Computed Tomography (CBCT) with a very small voxel size and improved image processing programs, capable of mitigating image artifacts, may enhance accurate and early diagnosis of VRF. Nowadays, 3D printing technology can faithfully reproduce fracture lines, contingent on the input image having a sufficiently high resolution.

Successful vital pulp therapy on a lower mandibular incisor with complicated crown fracture caused while eating with a fork: a case report with 26 months follow up.

Yessenia,ValverdeIngersoll[1]
[1]San Diego Family Care

Most dental traumas involve maxillary central incisors. A mandibular incisor fracture with pulp tissue involvement is less common. Treatment of complicated fractures in mandibular incisors is not often reported. This case reports successful direct pulp capping of a lower anterior incisor with complicated crown fracture. A healthy fifteen-year-old girl, established patient, from our community health center, presented with a broken lower central incisor (Ellis class III fracture). The patient hit her tooth with the fork while eating and watching videos with her cell phone and came to consult after 4 hours past the incident. Tooth #24 exhibited a horizontal crown fracture involving incisal and mid coronal thirds. Dentin tissue had a red brown hue appearance, and a clear pinpoint pulp exposure was noticed. At the exam, no signs of edema nor redness were noticed intra or extra orally, but only tooth #24 presented signs of fracture. Buccal and lingual margins were beveled, and no pulp removal was done. Instead, chlorhexidine application followed by Pulp capping with calcium hydroxide was decided to be done along with immediate composite restoration. The patient was followed up for twenty-six months after vital pulp therapy, and it has been confirmed ongoing success for this treatment both clinically and radiographically. This case represents an unusual cause of fracture in lower teeth, and the procedure for vital pulp therapy still confirmed to be the treatment of choice for complicated crown fracture in the absence of any definitive signs or symptoms indicating irreversible pulpitis of necrotic pulp. Despite no removal of pulp tissue, this treatment option can provide great outcomes for healthy children when being seen within the first hours after accident as confirmed via in vitro studies. This case also provides great insight for readiness for treatment within community health center clinics.

Replantation of two permanent avulsed teeth and management of soft tissue injury in an adolescent male patient.

Leezallini,Selvaraj[1];
Lily Azura,Lily Azura Shoaib[1];Nabihah,Dziaruddin[1]
[1]Faculty of Dentistry, Universiti Malaya, Malaysia.

Keywords: Replantation,avulsed tooth,soft tissue injury

Introduction:
An avulsed permanent tooth represents a complete displacement of tooth from its socket, constituting a true dental emergency. The optimal management of avulsed permanent teeth involves immediate replantation following a comprehensive assessment of the patient, including potential associated soft tissue injuries on the facial skin.

Case Presentation :
This is a case of a 15-year-old Indian boy who was allegedly hit by a motorcycle while he was stationary as a pillion rider on another motorcycle.He sustained dental trauma resulting in avulsion of the upper right central and lateral incisor teeth associated with uncomplicated crown fractures on both upper central incisors. Both teeth was stored in a dry medium by the patient and were successfully replanted 7 hours post-injury using Glass Ionomer Cement (GIC) splint in the Accident & Emergency department. A small laceration wound at chin camouflaged with his facial hair was only noted the next day during review. Toileting and suturing was done immediately. Following the IADT guideline root canal treatment commenced one week post-trauma, and concluded three months later without signs of external root resorption.

Discussion :
This case underscores the importance of comprehensive management of hard and soft tissue in dental trauma. Tooth replantation regardless of extraoral dry time is always the best decision as it will keep the future treatment options open and ideally facial soft tissue injury should be identified and closed as soon as possible to decrease risk of infection.

Conclusion :
Prompt management of dental trauma contribute to long term aesthetic, functional integrity and reduce unnecessary psychological distress especially in young adolescent patient.

A case of long-term preservation of a mandibular anterior tooth with root resorption 5 years after mandibular fracture

Itsuki,Hayashi[1];Daijiro,Hatakeyama[1]
[1]Department of Dentistry and Oral Surgery, Gifu University

Keywords:root resorption, mandibular fracture

Introduction
Root resorption due to trauma is caused by damage inflicted on periodontal tissues and pulp, and most of them are observed within one year of injury.
Root resorption is classified into internal resorption caused by pulpitis and external resorption caused by apical periodontitis and necrosis of the periodontal ligament.
In this study, we report a case of long-term preservation of a mandibular anterior tooth with root resorption 5 years after mandibular fracture.
Case Description
The patient was a 48-year-old man who sustained a median mandibular fracture due to traffic trauma.
The patient underwent an open repair and fixation of the fractured mandible, and the healing process of the fracture was good.
Five years after the surgery, he came to our department because of pain in the anterior mandible.
X-ray images showed root resorption of the right mandibular central incisor and root apex lesions of the bilateral mandibular central incisors.
The clinical diagnosis was a root cyst caused by pulp necrosis of the bilateral mandibular central incisors, and cystectomy and root apical resection were performed.
Postoperatively, the patient's symptoms disappeared and there was no increase in tooth movement.
Five years after the surgery, radiographic findings showed that the root resorption of the right mandibular central incisor remained, but the patient was doing well without any subjective symptoms.
Conclusion
In the case of root resorption of living teeth after trauma, prompt endodontic treatment is considered important.
In this case, because the root resorption tooth was an inactive tooth, we attempted to preserve it using a surgical approach, and as a result, long-term preservation was possible.
Reference
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ROOT SUBMERGENCE: A SECOND CHANCE?

Nurmimie,Abdullah[1]
[1]Hospital Sultan Idris Shah Serdang

Aim
This is a case of combined surgical and restorative management of a patient with crown-root fracture of permanent central incisor following a trauma. The aim of this case report is to demonstrate root submergence technique as an alternative to preserve alveolar bone integrity, especially in growing children.

Case Presentation
A 13-year-old girl presented to the Paediatric Dentistry Department, Hospital Kuala Lipis with a complaint of broken lower front tooth when she collided into her sister's elbow one month ago. Intraoral examination revealed crown-root fracture of tooth 42, partially covered with gingiva on the labial side. Radiographically, crestal bone was intact with no periapical pathology observed. As she has well-aligned teeth, root submergence was advised. Gingival flap was raised and root of tooth 42 was severed 2mm below the level of alveolar bone. Pulp was extirpated, the canal was obturated with Biodentine®, and sutured for primary closure. After one month, fibre reinforced bridge was constructed to maintain the esthetics. The appearance of the finished result was pleasing, as the patient and parent were satisfied.

Discussion
Tooth extraction leads to dimensional changes in the alveolar ridge. Bone loss of 1.5-2 mm vertically and up to 3.8 mm horizontally were reported within the first few months after extraction. This, if left untreated, will lead to almost 60% loss of total ridge volume in the first three years and eventually result in apical migration of soft tissues which negatively affects esthetics, phonetics and food impaction. Lack of sufficient alveolar bone may also compromise future prosthodontic treatment. Root submergence is a procedure to preserves alveolar bone compared to extraction. The present case describes the importance of root submergence to conserve bony integrity especially in children.

Conclusion and clinical relevance
Preservation of crown-root fractured tooth for as long as it provides reasonable function and esthetics, without compromising future rehabilitation, is recommended.

Conflict of interest: Nil

Autotransplantation of a premolar with two roots to replace a central incisor using a Co-Cr 3D-printed replica

Nabil,Ouatik[1,2]
[1]McGill University
[2]Centre intégré de santé et de services sociaux de l

Keywords:adolescent printing three dimensional tooth loss tooth autotransplantation transplantation

This case report describes the autotransplantation of a premolar with two roots to replace a lost upper left central permanent incisor following a traumatic injury. The 16-year-old male subject incidentally had an impacted supernumerary premolar located palatally to the the second upper left permanent premolar. Due to ease of access, this second permanent premolar was easier to recover without damage to the PDL and received a pre-extraction root canal therapy since its apices was closed. The tooth underwent orthodontic activation forces for 6 weeks and was then extracted and reimplanted to replace the lost incisor. The selected tooth had two roots which was not ideal for transplantation but the surgery was aided by digital planning using a CBCT and a 3D printed Co-Cr copy of the premolar. Postoperative evaluation and radiographic assessment demonstrated successful healing of the transplanted tooth. This case underscores the benefits of autotransplantation in treating traumatic tooth loss in growing patients.

Apical tooth replantation with surgical root intrusion technique for the treatment of hopeless teeth with severe endo-periodontal lesions, pathologic tooth migration, and gingival recession.

Shunsuke,Fukuba[1];Yudai,Ogawa[2]
[1]Tokyo Medical and Dental University
[2]Private Practice, Shizuoka

Keywords: Endo-periodontal lesion, Periodontal regeneration, Tooth replantation, Gingival recession, Hopeless tooth.

Endo-periodontal lesions caused by various factors such as trauma, iatrogenic factors or periodontal infections can be challenging to treat, especially in cases of severe attachment loss and gingival recession near or beyond the apex. These cases often lead to a poor or hopeless prognosis with available treatment options limited.

To tackle these specific problems, a novel surgical technique called “Apical tooth replantation with surgical intrusion technique (ATR-SIT)” has recently been developed. The aim of this innovative surgical approach is to enhance the predictability of periodontal regenerative therapy by implementing the following steps: 1) extra-oral debridement of the root surface to completely remove infectious substances, 2) apically intrusion of the tooth into a surgically-deepened socket to improve the crown-root ratio, 3) alteration of the defect morphology around the root to create a contained bony defect suitable for periodontal regeneration, 4) replantation of the tooth into the dentition for proper tooth alignment, 5) guided tissue regeneration with biologics, bone graft substitutes and resorbable membrane, and 6) root coverage with a coronally advanced flap, if necessary.

In my presentation, it is described the ATR-SIT step-by-step process and the clinical outcomes of several cases associated with ATR-SIT for the treatment of teeth with a hopeless prognosis.

We believe this technique should not be performed as a routine procedure in daily practice but rather as a last resort for tooth preservation. Careful patient and case selection are necessary to consider the value of this technique. Further prospective clinical studies with larger case numbers are warranted.

Apical tooth replantation with surgical intrusion technique could be a potential alternative to tooth extraction of hopeless teeth with severe endo-periodontal lesions, pathologic tooth migration, and gingival recession.

The authors reported no conflicts of interest related to this presentation.

Delayed reimplantation of an avulsed tooth and its clinical significance: a twenty-four-month follow-up report

Aman,Kumar[1];Vaishali,Bhati[1]
[1]Institute of Medical Sciences, Banaras Hindu University

Keywords: Tooth Avulsion, Tooth Luxation, Tooth Reimplantation, Fluoride

Delayed reimplantation of an avulsed tooth and its clinical significance: a twenty-four-month follow-up report

Author: Aman Kumar, Vaishali Bhati

Aim: The present case reports the clinical and radiographical outcomes of delayed reimplantation of an avulsed tooth that was reimplanted after 72 hours of being avulsed from the mouth.

Case presentation: A ten-year-old male child reported trauma to the upper front teeth three days ago. There was a missing maxillary central incisor and a luxated maxillary lateral incisor on the left side. The socket of the avulsed tooth was debrided and irrigated, the avulsed tooth was cleaned and disinfected, and the necrotic tissue was removed from the root surface by performing curettage, followed by the application of silver diamine fluoride (SDF) (38%) for 1 minute and letting it remain like that for a duration of three minutes before reimplanting into the socket. Splinting was done for two weeks, and endodontic treatment was performed after seven days. Twenty-four months of follow-up revealed a clinically asymptomatic condition with radiographic evidence of minor root resorption in the central incisor, which is otherwise functionally normal and aesthetically pleasing.

Discussion: Removal of necrotic periodontal ligament tissue has been shown to reduce the chances of inflammatory resorption, so the necrotic tissue was removed in this case by performing curettage. Application of topical fluoride to the root surface has been shown to delay the progress of replacement resorption of the root, so in the present case, SDF was applied to the root surface.

Conclusion & clinical relevance: The duration of extra oral dry time and contamination of the root surface should not be the deciding factors prior to reimplantation of an avulsed tooth. Further research is required to prevent the resorption of roots in such cases.

Conflict of interest: The authors declare no conflict of interest.

A severe external inflammatory root resorption after tooth avulsion: a case report of the multidisciplinary treatment with the 10-year follow-up

Greta,Lodiene[1,3];Darius,Loda[2,3];
Daiva,Sabaliauskiene[2,3]
[1]PhD, DDS, Assoc. prof.
[2]DDS
[3]Lithuanian University of Health Sciences

Keywords:external inflammatory root resorption, tooth avulsion, long-term outcome

A severe external inflammatory root resorption after tooth avulsion: a case report of the multidisciplinary treatment with the 10-year follow-up

Lodienė Greta, PhD, DDS[1], Loda Darius, DDS[1], Sabaliauskienė Daiva, DDS[1]

[1] Lithuanian University of the Health Sciences, Academy of Medicine, Faculty of Odontology, Department of Dental and Oral Pathology

Background: The case report describes the multidisciplinary dental care of an avulsed immature maxillary central incisor with severe external inflammatory root resorption (EIRR).
Case presentation: A 10-year-old female patient complaining about "the bleeding gumball" next to the maxillary right central incisor (#11) was referred to the endodontist. Three and a half years ago she suffered from tooth #11 avulsion, which was subsequently replanted, however with no follow up. Clinical and radiographic examination revealed severe EIRR of the tooth #11. The treatment involved intracanal dressing with calcium hydroxide paste followed by root canal obturation with mineral trioxide aggregate and crown restoration with composite.
Results: During the follow-up periods the patient had no complaints, but the resorption had progressed rapidly resulting in the crown fracture of the tooth #11. A decision was made to perform the decoronation procedure after nineteen months. The space was maintained with a removable orthodontic appliance. No pathological changes were observed at subsequent follow-up appointments. At the age of twenty years the patient underwent dental implant procedure of tooth #11 following the restoration with a zirconium crown.
Discussion: Treatment of the immature teeth after avulsion represents a major challenge. Two key factors largely predict the prognosis including the extra-oral time and characteristics of storage media. EIRR following avulsion and replantation is a severe complication with rapid progression in children, leading to a significant root loss and tooth extraction, which in turn complicates alveolar bone preservation for future implant. These severe complications require specific knowledge, skills and the teamwork of the experts in dental care.
Conclusions&Clinical relevance: Despite the challenge, the present case report demonstrates a multidisciplinary approach of the severe EIRR of the maxillary central incisor of a young patient including decoronation and implant site preservation till adulthood leading to patient satisfaction both in esthetics and functional outcome during all treatment stages.
All authors declare no conflict of interest.

MULTIDISCIPLINARY TREATMENT OF A DELAYED COMPLICATED CROWN FRACTURE OF IMMATURE PERMANENT CENTRAL INCISOR AND ANTERIOR CROSSBITE: A CASE REPORT

Rana,Yalcinkaya[1];Esra,KIZILCI[1];Kevser,KOLÇAKOĞLU[1]
[1]Erciyes University, Faculty of Dentistry, Department of Pediatric Dentistry

Keywords:dental trauma, apexification, MTA, crossbite

MULTIDISCIPLINARY TREATMENT OF A DELAYED COMPLICATED CROWN FRACTURE OF IMMATURE PERMANENT CENTRAL INCISOR AND ANTERIOR CROSSBITE: A CASE REPORT

Rana YALÇINKAYA1, Esra KIZILCI1, Kevser KOLÇAKOĞLU1
1Erciyes University, Faculty of Dentistry, Department of Pediatric Dentistry, Kayseri,Turkey yalcinkrana@gmail.com

Objectives
This case report aims to present a multidisciplinary treatment procedure for a delayed complicated crown fracture in a pediatric patient using mineral trioxide aggregate (MTA). Treatment involves orthodontic treatment of anterior crossbite, and 3 to 6 months of clinical and radiological follow ups.

Case Report
An 11 year-old male patient referred to our clinic with a chief complaint of crown fracture due to a dental trauma that occured 1.5 years ago and unaesthetic appearance of anterior teeth. Tooth #11 was diagnosed as complicated crown fracture with necrotic pulp, while tooth #21 was diagnosed as non-complicated crown fracture accompanying an anterior single tooth crossbite. Pulp vitality assessed using electric pulp test and only tooth #21 had a positive response. A large periapical radiolucency around apex of tooth #11 was detected on the radiograph with an uncompleted root formation. According to medical anemnesis, patient was using anti-epileptic drugs.
MTA apexification procedure is performed for the treatment of tooth #11. After placing 3 mm of MTA plug in 1/3 of the apex, gutta percha was placed. Both teeth are restored with direct composite restoration. After that, the patient is treated with removable crossbite appliance. Healing of periapical tissues was achieved at 3rd and 6th month recalls.

Discussion
Calcium hydroxide can be used for apexification treatment. However, it has some disadvantages such as the need of multiple sessions, the risk of tooth fracture because of the extended periods. On the other hand, MTA offers advantages including reduced chair time, superior biocompatibility, yet the manipulation and placement of MTA can be challenging.

Conclusion and Clinical Relevance
In this case, apexification procedure was preferred considering the patient's systemic condition during treatment planning. On the other hand, although an immediate treatment action is crucial for a proper healing, dentists should have the awareness of the management of delayed cases.

Authors aims no conflict of interest out of this case report.

An effective combination device for Autotransplantation -5 years of observation after the operation-

Hiroshi,Teraoka[1]
[1]Freelancer

Keywords: Autotransplantation, Adjusted, Socket, Apicoectomy, Retro-filling

Presenter:
Hiroshi Teraoka (A Freelancer, Endodontist).

Purpose:
The purpose of this presentation is to report an effective device for autotransplantation.

Material and Method:
The patient was a 46-year-old woman. A second right maxilla molar could not be conserved because of a vertical root fracture. I suggested extracting the tooth and doing autotransplantation using the maxilla left third molar. The patient was informed and consented to the procedure. Before doing the procedure, a Cone Beam Computed Tomography image was taken. During the operation, I recognized that the donor tooth did not fit the socket well. To resolve the issue, I decided to cut the root apex and retro root canal filling during the operation.

Results:
The operation was successfully done. Three weeks later, the tooth was treated with root canal treatment and core buildup by me. Then, the patient returned to the referred dentist, and the tooth was crowned. It has been five years since the operation and there are no complaints or clinical symptoms for the patient. Radiographs show evidence that there isn't apical periodontitis, root resorption, or any diseases.

Discussion:
It is said that autotransplantation is a last resort. There are some key points for a successful autotransplantation such as operating time and the timing of the root canal. However, the most essential point is the size matching of the donor tooth and the socket. The operator did not enlarge the socket since there is a possibility of perforating to the sinus. Cutting the root end is done for apicoectomy and tooth replantation so it is applicable for autotransplantation.

Conclusion:
A combination of autotransplantation and apicoectomy is one of the solutions if the donor tooth is large and the fitting socket is not ideal.

Conflict of interest:
There are no conflicts of interest to report about my presentation.

Intellectually disabled girl's luxated incisor stabilized by a vacuum-formed retainer and 3 other cases about luxation or avulsion of ordinary patients: Clinical reports

Masamitsu,Tsumori[1]
[1]Meiwa Dental Clinic

Keywords:intellectually disabled, luxation, avulsion, stabilized,a vacuum-formed retainer

Authors with their affiliation : Masamitsu Tsumori, DDS, PhD, the owner of Meiwa Dental Clinic

Aim(s) of the cases or technique included in the poster] : These cases were 3 luxated and one avulsed incisors. One of patients was intellectually disabled girl. She took a flexible splint by hands. This treatment was not using a flexible splint but using a vacuum-formed retainer (thickness 1.0mm) because she could not take it. The others were same.

Case Presentation (for case report or case series)/ Methodology (for clinical description of a technique/ material) : The patients were from 5 years-old to 42 years-old females.
1. Stabilize tooth with light cured resin (Light Fix; Sun Medical Co Ltd, Shiga, Japan)
2. Impression.
3. Create a vacuum-formed retainer (hard-type, thickness 1.0mm).
4. Deliver retainer within 8 hours after trauma
5. Keep retainer on all day except when brushing teeth 28 days.
6. Check the mobility of tooth after 1, 7, 14, 21 days.
7. Test the pulp (EPT) in the case of luxation after 1, 7, 14, 21 days. (The dial of EPT is 0~10. The dial number 0 is minimum. The dial number 10 is maximum.)
8. Check mobility of the tooth, electric pulp test, percussion, palpation, probing and periapical radiograph after 28 days
But the intellectually disabled girl could not answer clinical questions, so her tooth was checked about mobility and discoloration.

Discussion: The vacuumed formed retainers increase stability and help decrease pain and edema following trauma or post-operative procedures. If they are intellectually disabled or young or careless, they may bite again and the splint may come off, but this treatment does not pose a risk.

Conclusion & Clinical Relevance : Traumatic injuries such as luxation and avulsion stabilized by a vacuum-formed retainers showed healing after 28 days if worn constantly, except when brushing teeth. And the healing of the intellectually disabled patient took 56 days.

A statement regarding conflict of interest : The author denies any conflicts of interest related to this study.

A case of immediate tooth transplantation combined with FGF2 after forming a receptive socket using acrylic replica tooth for a missing molar tooth in an adult male.

Daisuke,Shiraishi[1,2]
[1]Shiraishi Dental Clinic
[2]Dept. of Perio. and Endo., Grad. Sch. of Dent., Tohoku Univ.

Keywords: Tooth transplantation, FGF2, Replica tooth

Daisuke Shiraishi D.D.S., Ph. D.

Tooth transplantation has been widely recognized as a good treatment for tooth loss in young people for a long time, but it is thought that the success rate tends to decrease with age after the age of 30 due to aging. This is thought to be due to a decrease in the activity of periodontal ligament cells. However, with the development of 3D printing technology in recent years, the technique of tooth transplantation has been reviewed, and a surgical method that causes less damage to the periodontal ligament has been reported, and it is attracting attention as the first option for treating missing teeth in young people with donor teeth present. are collecting. In addition, FGF2, which has been clinically applied as a periodontal regeneration therapy drug in Japan for six years, activates undifferentiated mesenchymal cells in the periodontal ligament, induces differentiation into cementoblasts and osteoblasts, improves the periodontal tissue, and good treatment results have been reported for regeneration. This time, for an adult man in his 36 years old who lost a molar due to tooth fracture, we used an acrylic resin replica tooth to form a receptive socket, and used FGF2 in combination when transplanting a donor wisdom tooth immediately after the tooth was extracted, resulting in a good periodontal recovery. We report the surgical method and treatment progress for a 4-year-old case in which tissue formation has been achieved.

A case of a vital and discolored tooth with pulp revasclarization occurred after trauma, which achieved a color harmony with the combined bleaching.

Kuroda,Toshiki[1]
[1]Kuroda Crystal Dental Clinic Kichijozi

Keywords:combined bleaching, Teeth discoloration, pulp canal obliteration, vital tooth, trauma, revasclarization, transient apical breakdown

Teeth discoloration can occur due to trauma, etc., but we report on a case in which we attempted to improve the color tone of the discolored tooth with vital reactions by the combined bleaching with office bleaching (OB) and home bleaching (HB).

Case
1) Patient: 37-year-old female
2) Chief complaint: Aesthetic disorder due to discoloration of the left maxillary central incisor (tooth #21).
3) Past medical history: Previous trauma to the anterior tooth due to a fall.
4) Current symptoms
(1) Intraoral findings: A discolored tooth #21
(2) Gingival/periodontal/clinical symptoms: No special notes

Examination
-Electrical pulp test: (+)
-Thermal test: Hypersensitive to cold (-), to heat (-).
-Thermal and cold sensitivity: No difference between left and right.
-No sensation duration after stimulus removal
-Percussive pain (-)
-Tenderness (-)
-X-ray findings: Untreated root canal of tooth #21, pulp cavity stenosis (+), periapical lesion (-)

Treatment progress
Diagnosis/treatment plan/surgery
The tooth #21 is a vital and discolored tooth. We performed OB on the tooth, then performed HB on the entire teeth.

Postoperative course
The color tone of tooth #21 was improved, and color harmony was achieved in the oral cavity. Color regression was hardly seen for 6 years after the treatment, and abnormal x-ray findings such as a periapical lesion were not observed.

Result
In this presentation, the color tone of discolored the vital tooth caused by pulp canal obliteration due to revasclarization or transient apical breakdown was improved by the combination with OB and HB on the vital teeth without root canal treatment or prosthetic treatment. The color harmony was achieved by the combined bleaching for vital discolored teeth (CBV).

There is no COI status to disclose for this case report.

Traumatized Tooth- Wired and Plugged!

RajeevKumar,Singh[1];Ashmeetkaur,Sukhbirsingh Oberoi[1]
[1]Department of Paediatric & Preventive Dentistry, KGMU, Lucknow

Authors:
1. Dr. Rajeev Kumar Singh (Author)
Department of Paediatric & Preventive Dentistry, KGMU, Lucknow

2. Dr. Ashmeetkaur Sukhbirsingh Oberoi (Co-author)
Department of Paediatric & Preventive Dentistry, KGMU, Lucknow

Aim: To optimally manage and closely monitor the aftermath of trauma in a case of multiple traumatic dental injuries (TDIs).

Case Presentation: An 8-year-old boy reported to the city trauma center after an accident with multiple oro-facial injuries and got diagnosed with fracture in his leg at the center. The facial wounds were sutured, necessary CBCTs done and the patient was referred to our department for dental management. The patient arrived around 26 hours from the injury, with 3 knocked-out teeth, wrapped in a paper. In his early mixed dentition phase, the boy had left permanent maxillary central incisor, two primary incisors avulsed, and the right permanent maxillary central incisor intruded. The permanent avulsed tooth was replanted, splinted in two-sections with exclusion of intruded incisor, managed with MTA Barrier Technique post-splinting. Follow-up at 1 month, 3 months, and 6 months revealed no periapical resorption in traumatized teeth, and intruded incisor showed spontaneous re-eruption.

Discussion: The clinician's decision for treatment planning depending upon the clinical situation demanded a more comprehensive outlook. Like, since the patient had to be on bed rest for healing of leg fracture for another month, it was decided to choose apexification over revascularization, for more predictable results and prognosis that it offers. Another challenge was addressing isolation difficulties caused by exudation of inflammatory gingival fluids and early mixed dentition situation with a two-sectioned splint. Systemic antibiotics, patient instructions, follow-up are another considerable aspects.

Conclusion & Clinical Relevance: The scenario demands an addressal to research questions regarding the use of two-section splinting and the suitable endodontic treatment for such situations.

Comparison of pulp cavity of maxillary right and left central incisors after dental trauma treatment.

Taiji,Nagahashi[1]
[1]Nagahashi dental clinic

Keywords:dental trauma, crown fracture, lateral luxation,pulp cavity

[author] Taiji Nagahashi

[organization] Nagahashi dental clinic

[COI] The authors declare no conflicts of interest associated with this manuscript.

[title] Comparison of pulp cavity of maxillary right and left central incisors after dental trauma treatment.

[abstract]
Dental trauma is a typical dental emergency. In dental trauma, fractures and luxations have different healing types and are diverse. In the case of crown fractures, it is often possible to preserve the pulp if conditions are favorable, even if the pulp is exposed immediately after the injury. In the case of luxations, the healing process depending on the degree of luxation and the time it takes for reposition the tooth. The clinical outcome of young patients, who are frequently injured, has a significant impact on their later life. Therefore, good results in terms of esthetics, functionality, biology, and longevity are required. This case report describes a traumatic injury to a maxillary right and left central incisor that caused lateral luxation in one tooth and crown fracture with pulp exposure in the other. A laterally luxated tooth (#11) was treated with reposition and splint, and a crown fractured tooth (#21) was treated with partial pulpotomy and restoration for composite resin, and splint and followed up. As a result, good functional, biological, and esthetic results were obtained. Both teeth were able to preserve the pulp and showed positive reaction in the electrical pulp test. However, the changes in the pulp cavity on radiographs during the healing process are quite different. After dental trauma in young patients, the healing process is dynamic. They are important that emergency treatment and follow-up after injury . This case report compares and discusses the clinical examination and the pulp healing process at each stage of follow-up.

Management of an intrusive dental injury following inflammatory related root resorption – A Case Report

Shaimaa,Alsayrafy[1];Sherifa,Almukhaizeem[1];
Dalia,Alhennawi[1]
[1]Kuwait Board in Paediatric Dentistry

S.Alsayrafy, S.Almukhaizeem, D.Alhennawi
Kuwait Board in Paediatric Dentistry, Kuwait Institute for Medical Specializations, Kuwait.

Aim: To report the management of intrusive dental injury following inflammatory-related root resorption in a young permanent incisor based on the recommendation of the International Association of Dental Traumatology (IADT).

Case Presentation: A healthy 9-year-old boy sustained a traumatic dental injury (TDI) in school. He presented to the clinic 3 days later. Clinical examination revealed teeth #11 #21 #31 were diagnosed with uncomplicated crown fracture, along with tooth #11 had been axially displaced into the alveolar bone, and #21 had been subluxated. Radiographic examination showed both #11 and #21 had incomplete root formation, while #31 had a mature root. Management, following the IADT guidelines, included monitoring of #11 for 4 weeks to allow spontaneous repositioning and composite buildups for #11, #21, and #32. During the follow-up period, the development of inflammatory-related root resorption to teeth #11 and evidence of periapical radiolucency #21 was discovered at 4 months, by the lack of response to the sensibility test with clinical symptoms along with confirmation by CBCT. Apexification was initiated for #11 and #21 using TotalFill BC putty. At 6 months review, all traumatized teeth were functional and esthetically pleasant.

Discussion: Intrusion is the most severe type of all luxation injuries, leading to considerable damage to the PDL and the pulp. Intruded teeth need to be monitored carefully to detect early signs of pulp necrosis and/or external inflammatory resorption. If revascularization fails in these cases, inflammatory-related root resorption can cause complete root destruction within a few months.

Conclusion: Despite careful management of TDI, unexpected complications might happen; therefore, a close follow-up is mandatory for a good long-term prognosis of teeth with a history of TDI.
The authors declare no conflict of interest.

Use of removable appliance for orthodontic repositioning of severely intruded permanent incisors with complicated crown fractures in a young patient in mixed dentition

Sulin,Quak[2];Catherine Hsu Ling,Hong[1];
Huei Jinn,Tong[1];Sheung Kin,Kaan[1]
[1]Faculty of Dentistry, National University of Singapore
[2]Health Promotion Board Singapore

Keywords: Intrusion

Aim: To illustrate multi-disciplinary management of a young child with delayed presentation of severe intrusion injuries.

Case Presentation: :
A healthy 9-year-old boy suffered severe intrusion and complicated crown fractures to #11 and #21. He sought emergency dental treatment where pulpectomies of both teeth were performed but no active repositioning was done. He failed to follow-up thereafter but presented three months later at our dental clinic. Clinical examination revealed no spontaneous re-eruption of #11 and #21 and both crowns were fractured and submerged under gingiva. Radiographs showed signs of inflammatory root resorption(IRR) on both teeth. Treatment aims were to arrest IRR and reposition #11 #21 to their original position for aesthetics and function. Both teeth were re-debrided and dressed with intracanal calcium hydroxide. Subsequent radiographs showed arrest of resorptive processes and re-establishment of normal periodontal ligament (PDL) space. Orthodontic repositioning was performed using an upper removable appliance. Following orthodontic extrusion to the desired position, root canal treatment and composite strip crown restorations of both teeth were completed. At 18 months follow-up, #11 and #21 remain clinically asymptomatic with no radiographic signs of root resorption or periapical pathology.

Discussion :
There is limited evidence comparing orthodontic versus surgical repositioning in the management of intrusion injuries. Orthodontic repositioning is preferable as it induces less periodontal damage to traumatized teeth, especially in cases of delayed presentation where initial healing of surrounding PDL tissues have already occurred. In mixed dentition, removable appliances provide sufficient anchorage for tooth extrusion due to its extensive soft tissue coverage. This prevents undesired movements of adjacent teeth and is advantageous over fixed appliances.

Conclusion & Clinical Relevance :
Orthodontic repositioning is a suitable treatment approach for managing intruded permanent teeth as it minimizes periodontal damage to teeth which have already suffered extensive PDL injury. Removable appliances are useful in achieving desired tooth movement particularly during mixed dentition stage.

Multidisciplinary Approach in Management of Intrusion in Immature Maxillary Incisors

Eliska,Dokoupilova[1];Jana,Vasakova[1];
Wanda,Urbanova[1];Jiri,Borovec[1]
[1]University Hospital Kralovske Vinohrady, Prague

AIM: Case report describes multidisciplinary approach in management of immature maxillary incisors intrusive luxation with unfavorable outcome.
CASE PRESENTATION: 8-year-old anxious girl was referred to the Department of Stomatology 10 days following an injury on vacation abroad. Orthopantomogram was done and antibiotics were prescribed at emergency abroad. CBCT was made by general dentist after arrival. Clinical and radiographic examination by paediatric dentist revealed intrusion of immature 21 and uncomplicated crown fractures of 11, 21 and 22. Adjacent teeth had fysiological response to sensibility testing. Follow-ups and treatment steps were arranged according to IADT guidelines (2020).
Fractured surfaces were covered by glassionomer coverage, only partial spontaneous reposition of 21 was observed within 4 weeks. Therefore, orthodontic extrusion with a partial fixed appliance was initiated. 4 months later the patient came in with acute pain, fever and vestibular swelling at 11. Root canal treatment with MTA plug was done under nitrous oxide sedation concerning the patient´s anxiety. Direct composite restorations and CBCT were done after orthodontic aligning. CBCT revealed asymptomatic advanced external inflammatory resorption of 21. Therefore, the patient was referred to microscopic endodontics with bioactive material.
DISCUSSION: Following IADT guidelines, the immature intruded tooth was allowed to spontaneous re-eruption. If failed, orthodontic extrusion should be initiated within 4 weeks. Immature teeth with parallel root canal walls could be treated with MTA plug or apexification. MTA plug is less time consuming and more effective. Endodontic treatment with bioactive material has better outcome than common gutapercha filling in inflammatory external resorption. In severe cases of resorption extraction and tooth autotransplantation should be considered. Considering the patient´s anxiety we decided on endodontics and left the autotransplantation for the future.
CONCLUSION: Interdisciplinary approach, behavior management, guidelines and individual approach in dental treatment are necessary in children´s dental trauma.
The authors declare no conflict of interest.

Management of Complicated Crown-Root Fracture in a Vital Young Permanent Incisor using Glassfibre Ribbon as a Reinforcement

Abdulllah,AlEnezi[1];Hussa,AlBahar[1];
Sherifa,AlMokhaizeem[1]
[1]Kuwait Board in Paediatric Dentistry

Keywords: Crown-root fracture, Glassfibre ribbon, fiberglass, recurrent trauma, vital pulp therapy

Aim:
Management of a child's severely traumatised incisor, while maintaining vitality, aesthetics, and function.

Clinical Presentation:
A 9-year-old-boy attended as emergency 1-day following a scooter accident, causing complicated crown-root-fracture(CRF) of upper-left central incisor(#21). It had a subgingival fracture line bucco-palatally, with less than one-fourth of the crown remaining. Immediate removal of the mobile fragment was performed, followed by vital-pulpotomy using calcium-silicate bioceramic putty and composite build-up reinforced by glassfibre ribbon. Comprehensive treatment included restoration of #11 uncomplicated enamel-dentine fracture, multiple restorations of carious teeth, and management of plaque-induced gingivitis. 3-months later, the patient experienced recurrent trauma to #21, resulting in complete loss of restoration, with no affect on remaining tooth structure. Gingivectomy using electrocautery was performed, followed by another composite build-up reinforced with glassfibre ribbon.

Discussion:
CRF is rare dento-alveolar injury, representing 5% of all dental trauma injuries to permanent teeth, involving enamel, dentine, cementum, and pulp. This case report demonstrates that despite tooth #21 having severe and subgingival-dento-alveolar injury with minimal tooth-structure remaining, advancements of glassfibre ribbon allowed effective composite restoration, while pulpotomy using calcium-silicate-bioceramic putty allowed the young tooth to maintain its vitality. The glassfibre-reinforced composite allowed stress from recurrent trauma to transfer to the restoration, rather than the tooth. Challenging aspects of this case included subgingival location of the fracture margin, minimal remaining tooth structure, gingivitis with dental caries, and recurrent trauma.

Conclusion & Clinical Relevance:
Although CRF is rare traumatic dental injury with varied prognosis, its treatment remains challenging due to location, severity, and restorability of the sub-gingival fracture. This case highlighted the value of glassfibre ribbon to reinforce composite build-up of severely injured young permanent incisors, while preserving remaining tooth structure and maintaining pulp vitality.

Conflict of interest:
All authors declare that they have no conflict of interest in the making of this case report.

Orthodontic Management in Delayed Presentation of Laterally Luxated Tooth: A Case Report

Krisadi,Phannarus[1]
[1]Queen Sirikit National Institute of Child Health

Keywords: Orthodontic, Lateral luxation, Delayed presentation, Dental trauma

Author : Krisadi Phannarus

Introduction
Lateral luxation is one of the most common traumatic dental injuries (TDIs). The time elapsed between dental trauma and treatment initiation greatly influences the prognosis of TDIs. According to dental trauma guidelines, an immediate repositioning and splinting should be applied to prevent complications related to the injuries such as pulp necrosis. Data on the use of orthodontic management in lateral luxation injuries are limited.

Case presentation
We report the case of a healthy 6-year-old boy presenting with displacement of the upper left central incisor after a dental injury five days prior. A periapical radiograph revealed a distoangulation of dental crown, accompanied by one-third of the dental root development. Due to delayed presentation to dental clinic, repositioning of the luxated tooth with pressure was not feasible. An alternative orthodontic intervention was performed. Pre-adjusted edgewise brackets were bonded to the central incisors and light force was applied using an elastomeric chain. The patient was scheduled for appointments every 4 weeks. At 4-month follow-up, the brackets were removed and no clinical failures were observed. After 5-year follow-up, the affected dental root showed only mild dilaceration and pulp canal obliteration. The corresponding central permanent incisor remained healthy and unaffected.

Discussion and conclusion
The present case report shows successful orthodontic management in a late-presenting patient with lateral luxation injury to immature permanent tooth with definitive repositioning result. While orthodontic techniques are less frequently used in the case of lateral luxation injuries, it could play a role as an alternative approach in patients receiving delayed treatment.

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Ingenuity to minimize invasion by using a tooth replica at the time of transplantation.

Shuji,Imura[1]
[1]Ishikawa dental clinic

Autologous tooth transplantation, utilizing the patient's own tooth and periodontal ligament for tooth defects, is often preferred over dental implants. Immediate implantation of the grafted tooth after extraction is crucial, requiring careful socket preparation. In this study, a replica of the grafted tooth was created from CBCT data to guide socket creation, minimizing bone invasion.A 43-year-old female patient presented in June 2020 with tooth pain in the right mandibular molar. Fearful of dental treatment, she avoided seeking care despite needing it. To minimize surgical invasion, autologous tooth grafting was performed, aiming to reduce reliance on implants. Unsalvageable 27,28 were extracted, and 38 was transplanted to 27 using a replica tooth. Similarly, 48 was transplanted to 47. An implant was placed in 35. The replica tooth, created from preoperative CBCT data using light-curing resin for a 3D printer, facilitated intraoperative autologous tooth grafting.
The use of replica teeth minimized bone removal, reducing the procedure's invasiveness and the patient's treatment-related fear. Additionally, it enabled precise socket placement, avoiding the need for contralateral tooth shaving and post-implant orthodontic work.(Treatment performed with informed consent.)

CC-037 CANCELLED

Autotransplantation of matured teeth – impact on improving bone conditions in the recipient site: Case descriptions

Leszek,Bury[1,2,3,4]
[1]Medical University of Wroclaw 50-425, ul. Krakowska 26 , Poland
[2]Polident Dental Clinic Pl. Grunwaldzki 15, Wrocław 50-378 Poland
[3]NuDental Cilinic ul Białowieska 87A Wrocław 54-234, Poland
[4]Easydent Clinic ul Brzeska 1, Oława 55-200, Poland

Autotransplantation of matured teeth – impact on improving bone conditions in the recipient site: Case descriptions

Leszek Bury - Department of Dental Surgery, Faculty of Medicine and Dentistry, Medical University of Wroclaw, ul. Krakowska 26, 50-425 Wroclaw, Poland

Introduction:
Autotransplantation of a mature tooth is a good treatment option for tooth loss if there is an appropriate donor tooth. Detailed qualification is essential. For some cases autotransplantation is a better option to take than implantation (necessary orthodontic treatment, poor bone conditions, financial aspect). This paper presents descriptions of 4 cases of autotransplantation of third mature molar teeth into post-extraction sockets with poor bone conditions or chronic inflammation, where implantation was impossible.

Methods:
Four patients underwent transplantations of wisdom mature teeth into post-extraction sockets where immediate implantations were not possible. Before the procedure, a detailed CBCT analysis and qualification were conducted, and a 3D model of the donor tooth was prepared each time to minimize the time outside the body and donor trauma during fitting into the recipient site. The transplanted teeth were removed with exceptional care. The time they spent outside the body was less than 10 seconds. Stabilization was achieved solely by sutures for a period of 2 weeks, and the teeth were positioned in infraocclusion. Post-procedure, follow-up RVG or CBCT was performed. RCT was done 28 days after the procedure, and clinical periodontal and radiological examinations were conducted at follow-up visits.

Results:
In all presented cases, perfect healing with bone regeneration occurred. No symptoms of ankylosis or resorption occurred during the observation period.

Conclusions:
Autotransplantation can provide satisfactory treatment outcomes with minimal financial investment even in cases of poor bone conditions. Important aspects include the selection of the donor tooth and its atraumatic removal, the time spent outside the body and type of stabilization.

There is no conflict of interests.

Banged-up Incisor? Just Reset!!!

Abhisek,Bhattacharjee[1];RajeevKumar,Singh[2];
Ashmeetkaur,Oberoi[3]
[1]Senior Resident,Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India
[2]Professor and Head, Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India
[3]Junior Resident, Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India

Aim: Effectively manage a complicated crown-root fracture using minimally invasive techniques.
Case presentation: A 9-year-old presented with recurrent swelling and occasional pus discharge from upper front teeth, arising from trauma sustained four months prior. Clinical examination revealed a vertical fracture in tooth #21, with Grade I and Grade II mobility in the mesial and distal fragments, respectively. Radiographically, a complicated crown-root fracture in tooth #21 was identified with an Eden Baysal's Dental Trauma Index score of (21)53Li- and a periapical index (PAI) score of 5. The fracture line extended obliquely to the middle one-third of the root, featuring lateral luxation of the distal fragment. A conservative approach was adopted, focusing on fragment reattachment, and addressing tooth mobility and infection. Periodontal involvement was observed at the 6-month follow-up.
At 18 months, treatment led to symptom resolution, periradicular bone healing, and a PAI score improvement to 0. Physiological mobility was achieved. Anticipated within the forthcoming 24-month follow-up is the satisfactory resolution of the periodontal pocket.
Discussion: Intricate challenge posed by complicated crown-root fractures in teeth remains an enigma for dentists, leading to prominent dichotomies regarding the decision to either extract or restore, and the choice between conservative and surgical management. Here, surgical intervention ultimately became imperative to address the persistent periodontal pocket. Nevertheless, the authors believe that a conservative approach is inherently preferable, justifying the waiting period for the spontaneous resolution of the periodontal pocket.
Conclusion and clinical relevance: The intriguing findings of this case prompt contemplation among practitioners, suggesting that, on certain occasions, a straightforward 'resetting' suffices to preserve a patient's smile. This not only underscores the nuanced decision-making process in dental care but also offers valuable insights for reflection and learning from the errors encountered during the course of this clinical journey.

The authors declare no conflict of interest.

Peeping Pulp Polyp: Story of a Vitality Quest...

Ashmeetkaur,Oberoi[1];
RajeevKumar,Singh[2];Abhisek,Bhattacharjee[3]
[1]Junior Resident, Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India
[2]Professor and Head, Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India
[3]Senior Resident,Department of Paediatric and Preventive Dentistry, Faculty of Dental Sciences, King Georges Medical University, Lucknow Uttar Pradesh, India

Aim: To manage a case of crown-root fracture with pulpotomy and fragment reattachment.
Case Presentation: An 8-year-old boy presented with a broken upper front tooth 14 days after the trauma. He had a complicated crown-root fracture in the permanent maxillary left central incisor. The fractured coronal fragment was palatally displaced with hyperplastic pulpal tissue protruding from the buccal fracture line in direct communication with the oral cavity. The tooth development stage at baseline was Nolla's stage 8 as viewed on an intraoral periapical radiograph. The displaced fragment was extracted and meanwhile stored in saline. Partial pulpotomy was performed using mineral trioxide aggregate, followed by a type IX glass ionomer cement coronal seal. The fragment was then reattached. Follow-up was done at standard intervals as suggested by the International Association of Dental Traumatology in 2020. There were no signs of pathology, no patient-reported symptoms, and a change in development to Nolla's stage 9 by 6 months. Fragment reattachment failure was reported at 4th month due to re-injury. The patient is still under follow-ups.
Discussion: Even after a long, 14-day delay in performing indicated endodontic therapy which is partial pulpotomy, the most gratifying aspect was its success marked by dentinal wall thickening and progression in root length. Fragment reattachment also was challenging owing to the fragment's sub-gingival extent in the palatal half of the tooth.
Conclusion & Clinical Relevance: A hyperplastic pulp, despite indicating an inflammatory reaction of the pulp, at the same time also reflects a positive pulp vitality. Pulpotomy proved to be successful in maintaining that vitality and bringing it to the benefit of the tooth as it continued to form the stunted root. A limitation in this case was the kid not being provided with protection from further trauma.
There is no conflict of interest, ensuring transparency of findings.

Multidisciplinary approach for the treatment of complicated crown-root fractures in a young patient: A case report

Peicheng,Yeh[1]
[1]Division of Endodontics,Taichung Veterans General Hospital

Multidisciplinary approach for the treatment of complicated crown-root fractures in a young patient: A case report
1Pei-Cheng Yeh, 2Jui-Hung Weng ,3Liayang Liao
1Division of Endodontics, Department of Stomatology, Taichung Veterans General Hospital, Taiwan
2Division of Prosthodontics, Department of Stomatology, Taichung Veterans General Hospital, Taiwan
3Division of Orthodontics, Department of Stomatology, Taichung Veterans General Hospital, Taiwan

Complicated crown-root fractures can lead to several challenges especially for young patients owing to functional and esthetic causes. To perform optimal treatment in such cases, it is necessary to use a carefully planned multidisciplinary approach. According to IADT guidelines, it is advantageous to preserve the pulp by performing partial pulpotomy in immature teeth that allows physiological root formation. However, there is no scientific data on the occurrence of pulp necrosis after vital pulp therapy following orthodontic treatment and crown restoration for complicated crown-root fractures.
The present clinical report demonstrated the combined efforts of intervention during the treatment of complicated crown-root fractures of immature maxillary central incisors in a 9-year-old girl. Partial pulpotomy using biodentine followed by full mouth orthodontic treatment and ceramic crown restoration were completed. At 3 years periapical film and CBCT follow-up, further root development of crown-root fractured teeth were observed with dentinal bridge formation without any signs of root resorption. Satisfactory esthetic and functional outcomes were also obtained.
Conclusion: The present case showed a treatment option of complicated crown-root fractures in immature permanent teeth that consisted of vital pulp therapy with partial pulpotomy, orthodontic extrusion and final prosthesis.
Conflict of interest: None declared

The vitality and potential of dental pulp in a traumatized permanent maxillary incisor

Hidetaka,Ishizaki[1,2];Atsutoshi,Yoshimura[2]
[1]Kiuchi Dental Clinic, Shizuoka, Japan
[2]Dept. of Periodontology and Endodontology, Nagasaki Univ.

Aim
Gingival swelling, percussion and palpation pain and periapical lesion in a permanent tooth usually indicate a pulp necrosis. Sometimes these symptoms and clinical findings happen after dental trauma and root canal treatment is required. The aim of this case report is to describe a traumatized permanent maxillary incisor with these clinical signs, which was treated with pulpotomy to preserve part of the pulp.

Clinical case
A 36-year-old man experienced maxillary right central incisor discomfort. He had a history of dental trauma on his maxillary anterior teeth region, when he was a student. Gingival swelling, percussion, palpation pain and no spontaneous pain were recorded. Periapical and lateral lesions were observed on intraoral X-ray. Cone-beam CT images showed that the buccal cortical bone was destroyed. Diagnosis was pulp necrosis and symptomatic apical periodontitis. Root canal treatment was planned and performed. After preparing access cavity, the necrotic pulp tissue of a coronal third of the root canal was removed and irrigated without anesthesia. Then, the patient experienced pain and bleeding from the root canal. Thus, part of the pulp was still considered vital. The remaining pulp tissue was capped with MTA. Subsequently, the patient's symptoms disappeared, and the periapical lesion decreased. Four years after the treatment, the periradicular lesion disappeared.
Discussion
Root canal has a complex anatomy and several complications happen after root canal treatment. In this case, part of pulp was still vital, although clinical history and symptoms indicate pulpal necrosis. Minimally invasive approach was used to save the remaining pulp tissue.
Conclusion
Pulp is more vitality than we expected. This case suggests that even if a traumatized permanent incisor shows these clinical signs, part of the pulp may be still vital, and pulpotomy is one of the treatment options.

I have no financial relationships to disclose.

Enamel infraction: more than meets the eye.

Noor,Othman[1]
[1]Faculty of Dentistry, Universiti Teknologi Mara

Author (with affiliation): Noor Ilyani Othman
Faculty of Dentistry, Universiti Teknologi Mara, Malaysia.

Aim: To report cases of enamel infraction of lower anterior teeth that led to pulp necrosis and symptomatic apical periodontitis.
Case Presentation: A 12-year-old boy and a 30-year-old lady were referred for non-surgical root canal treatment (NSRCT) of lower anterior teeth. Clinically, patients revealed mild crowding of lower anterior teeth with presence of apical abscess associated with 31 and 41. For the boy, 31 and 41 presented with enamel infraction with no caries or restoration. Second patient also presented with enamel infraction of 31 and 41 but with discoloration of 31. Further examination revealed tooth 31 was endodontically treated. Teeth 31 and 41 in both patients were tender to percussion, non-vital and associated with periapical radiolucency. Following NSRCT of these teeth, abscesses subsided and all teeth are asymptomatic.
Discussion: This report showcased occurrence of pulp necrosis, followed by abscesses; caused by what was thought a simple enamel infraction. In both patients, involved teeth were found non-vital. Classic study has proved early enamel lesion can cause cell alterations and pulpal infiltration. For this report, it can be assumed that periapical inflammation was a resultant to pulpal infection, since incidence of lesions with symptoms that were not sequelae of pulpal necrosis was reported at only 4%.
Conclusion & Clinical Relevance: Despite a simple enamel injury, bacterial migration occurred which led to total pulp necrosis in all involved teeth. This raise the issue of whether enamel infraction specifically caused by traumatic bite should be considered as trauma. In the present trauma guidelines, there is no mention of such scenario albeit its high occurrence. Perhaps it is time for a revision to guarantee patients' best management.

Statement: The author declares no conflict of interest.

Prosthetic-driven Autotransplantation with the Assistance of Medical Image Processing Software and a Real-time Navigation System: A Case Report

Hung-Ming,Chang[1];Szu-Han,Chen[1,2]
[1]National Taiwan University Hospital Hsin-Chu Branch, Taiwan
[2]Graduate Institute of Clinical Dentistry, NTU, Taiwan

Keywords:transplantation, autotransplantation, tooth, software, digital technology

Aim:
The aim of this paper is to provide an innovative method to aid clinicians in precisely preparing a recipient site with the assistance of medical image processing software and a real-time navigation system. This case report presents the autotransplantation of a mandibular molar using this technique with good short-term (9 months) clinical outcomes, including radiographic bone fill, normal probing pocket depth, physiologic tooth mobility, acceptable gingival level, and satisfactory restoration.

Case Presentation:
A 46-year-old systemically healthy male presented with a cracked line on the pulp floor of the mandibular right second molar (tooth 47), extending to the furcation area. He also presented with a missing mandibular left first molar (tooth 36) and mesial drifting of the mandibular left second molar (tooth 37) and third molar (tooth 38). The treatment plan involved the extraction of tooth 47, transplantation of tooth 38 to the socket of tooth 47, orthodontic uprighting of tooth 37, and implantation at the site of the missing tooth 36.

Discussion:
With the aid of a 3D-printed replica of the donor tooth, clinicians could reduce the extra-alveolar time and the number of fitting attempts, thus preserving the PDL cells. Using a dynamic navigation system, clinicians could further minimize recipient bone reduction and avoid buccal and lingual bone resorption caused by overpreparation. During treatment planning, we based the position of the transplant on the recipient alveolar bone condition and future prosthesis. Clinically, a real-time navigation system was used to execute the plan. This prosthetic-driven autotransplantation protocol contributes to the high predictability of osteotomy and prosthetic restoration.

Conclusions:
Autotransplantation with the assistance of medical image processing software and a real-time navigation system can achieve good short-term results. Long-term follow-up and well-designed studies are needed to assess the clinical benefits of this technique.

The authors declare no conflicts of interest.

Regenerative endodontic procedures on an avulsed immature permanent incisor with delayed replantation: Five-year follow-up

Yi-Yin,Lai[1,2];Hui-Chen,Chan[3,4]
[1]Tri-Service General Hospital
[2]Si-Ji Dental Clinic
[3]Taipei Veterans General Hospital
[4]Vine Pediatric Dental Clinic

Keywords: Avulsion, Delayed replantation, Immature permanent incisor, Regenerative endodontic procedures

Tooth avulsion is a severe dental trauma in which the tooth is completely displaced from the alveolar bone with the disruption of the neurovascular bundle and periodontal ligament. The prognosis of the replanted tooth depends on the extraoral dry time, the storage medium, and the amount of root development of the avulsed tooth. There is little information regarding delayed replanted teeth managed by the regenerative endodontic procedures (REP) for immature teeth. In this case report, the 7 years 11 months old male patient suffered from avulsion of his left maxillary permanent incisor due to a motorcycle accident. The tooth was wrapped in distilled water tissue by his mother within 6 minutes. The tooth was finally replanted and splinted without root surface alteration after more than 60 minutes of avulsion. With consideration of delayed replantation with extraoral time longer than 60 minutes and thin dentin walls due to immature developing root, the REP was performed instead of a apexification procedure to achieve continued root development and prevent extensive external root resorption . Through out the follow-up period, there was no replacement resorption and the length of the avulsed tooth with the REP was comparable with the contralateral tooth without avulsion. Although a sinus tract was found after three years following the REP, it was resolved after the root canal treatments. Tooth replantation and its continued root development are imperative for bone preservation, function, and esthetic of the anterior teeth area. This clinical case demonstrated that the REP is a treatment option for the delayed replanted immature young permanent tooth in order to prevent severe external infection-related (inflammatory) root resorption and allow for continuous root development.

Autotransplantation for malpositioned bilateral upper canines

Yusuke,Matsuzawa[1];Chisaho,Torii[1];
Shinnosuke,Yamashita[1];Syuichi,Hosokawa[1];
Tomoyuki,Kogo[1];Tetsuro,Yamashita[1];Yoshiaki,Sato[2]
[1]Keyukai Sapporo Hospital
[2]Hokkaido University

Purpose
The purpose of this presentation is to report on the usefulness of autotransplantation for malpositioned upper canines.
Case
The case is an 11-year-old girl. Bilateral maxillary deciduous lateral incisors and deciduous canines remained, and X-ray findings showed that both maxillary lateral incisors were congenitally missing. Bilateral upper canines were located between the first premolars and second deciduous molars. It was difficult to move the maxillary canines on both sides to their normal positions through orthodontic treatment, so I decided to transplant them to their normal positions. The bilateral upper deciduous canines and bilateral upper canines were extracted, and the bilateral upper canines were transplanted to their normal positions. The root developmental stage of the upper canines on both sides was Stage 5 according to Moorrees' classification. Because the alveolar width of both upper canines was narrow, the autotransplantation was performed with a 90 degree twist. After transplantation, the transplanted canines were rotated and intruded through orthodontic treatment. Four years and nine months after transplantation, the transplanted canines were well aligned, and radiographs showed a clear periodontal ligament space and lamina alba, as well as obliteration of the pulp canal.
Conclusion
Tooth transplantation for malpositioned canines was considered a useful treatment.
There are no conflicts of interest in this presentation.

Management of lateral luxated immature permanent incisor

Ruba,Mustafa[1]
[1]Jordan university of science and technology

Author: Ruba Mustafa

Aim:
This case report describes the management of lateral luxated immature permanent upper central incisor and concussion for the right central incisor and left lateral incisor.

Case presentation:
A healthy 8-year-old boy reported to the emergency clinic complaining of pain in his upper anterior teeth and swelling of his upper lip after a fall trauma that occurred 16 hours earlier. There is no history of loss of consciousness or vomiting. After a complete clinical examination and radiographic evaluation, the left central incisor was manually repositioned and stabilized for four weeks using composite resin and a steel wire diameter of 0.4 mm flexible splint. In addition, conservative management for the right central incisor and left lateral incisor was considered. The antibiotic was prescribed. Follow-up examinations revealed that the tissues had healed well, and the response to sensibility tests (cold test and electric pulp testing) was regained for the affected immature teeth after 2-3 months.

Discussion:
Dental trauma is a highly prevalent condition that is commonly seen in male children, especially when they are hyperactive in sports and games (1). Lateral luxation injury can result in the displacement of a tooth in a direction other than the axial direction (2). The most affected teeth are maxillary central incisors, followed by lower anterior teeth (1). There are many prognostic factors in the healing process, such as stage of root development, severity of periodontal tissue damage, speed of intervention, flexible splint (3), and root canal system infection. In this case, even with delayed intervention, immature root development favors revascularization and healing.

Conclusion and clinical Relevance:
This case study highlights the significance of early diagnosis, proper management, and routine follow-up of traumatized teeth to control the possible complications. Conservative treatment should be considered in some circumstances.

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A rare complication of primary teeth injury: partial arrest root formation of permanente tooth, surgical approach, and 5 years follow-up.

Magali,Hernandez[1,2];Julie,Guillet[1,2]
[1]Faculty of Odontology, University of Lorraine (France).
[2]Oral Surgery unit, CHRU Nancy (France).

Aims of the case: Describe the management of a rare complication of primary teeth injury: partial arrest of root formation associated with an infra-occlusion.

Case presentation: A 14-years-old boy was referred to the authors with a complaint of a non-esthetic smile. Dental history revealed a dental trauma when he was 7 years old. Tooth 21 was asymptomatic and responded normally to pulp stimuli. Infra-occlusion intraorally on tooth 21 and the dull metallic sound on percussion confirmed ankylosis. Periapical x-ray and CBCT showed an arrest of the root formation associated with a wide-open apex and an invagination of alveolar bone inside the root canal. Any signs of inflammatory or root resorption were observed. The orthodontic traction was contraindicated. A surgical repositioning of tooth 21 was practiced. Two years after, clinical and radiographic examinations confirmed the therapeutic success, no infectious complications or radicular resorption were observed. A novel infra-occlusion of tooth 21 was observed and corrected by orthodontic traction associated with an alveolar corticotomy procedure.

Discussion: The severity of injury induced by surgical protocol was considered as equivalent to an extrusion. Evaluation of several factors guided the therapeutic decision: 1) Time between procedure and tooth repositioning; 2) Root development; 3) Method of repositioning; 4) Extent of extrusion: pulp tissue necrosis and marginal periodontal healing were not always related to the extent of the dislocation, 5) occlusal interferences. In our case, tooth 21 was repositioned less than 5 min after the surgical luxation. The diameter of apical foramen was greater than 0.5 mm, so revascularization was expected. The repositioning of the tooth was performed minimizing periodontal ligament damages and a flexible splint was used to stabilize the position of tooth 21 on arch without occlusal interference.

Conclusion & Clinical relevance: this surgical treatment maintained vertical bone height, pulp and periodontal healing and improved self-appearance.

Pulp Revascularization in Permanent Immature Incisors: 8-Year Follow-Up of Trauma

Satish,Alapati[1,2,3];Evelina,Kratunova[1,3]
[1]University of Illinois Chicago
[2]Department of Endodontics
[3]Department of Pediatric Dentistry

Keywords: Regenerative Endodontics, Revascularization

Aim: Dental pulp revascularization emerges as a biologically based alternative treatment for immature necrotic teeth, presenting a paradigm shift from traditional methods that create artificial apical barriers. This regenerative approach utilizes the intrinsic healing potential of stem cells from residual pulp and periodontal areas, aiming to restore vitality and promote natural growth in traumatized immature permanent teeth. This case presentation reports on the long-term outcomes observed in two pediatric cases over an eight-year period, highlighting the role of revascularization in dental trauma outcomes.

Case Presentation: Case reports of a 7-year-old female with a severe palatal luxation of the upper left central incisor and a 9-year-old male with a completely intruded upper left central incisor are described. Both cases underwent pulp revascularization procedures and were monitored for eight years.

Discussion : The first case showed a successfully revascularized tooth, fully functional in a 15-year-old patient, indicating recovery and continued root development post-treatment. The second case resulted in a functional tooth eight years post-revascularization, without the occurrence of ankylosis, a common complication following traumatic intrusions. This outcome suggests that the biological attachment facilitated by revascularization may prevent ankylosis, aiding in the long-term preservation of the tooth.

Conclusion and Clinical Relevance: These cases demonstrate the potential of pulp revascularization in managing traumatically injured immature permanent teeth, demonstrating successful outcomes in tooth functionality and the prevention of complications like ankylosis. The findings support further consideration and investigation into pulp revascularization techniques within pediatric dentistry for the effective treatment of immature teeth following trauma.

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Development of apical resorption and recurrent lesion after orthodontic treatment in maxillary lateral incisor with previously successful regenerative endodontic treatment (RET): long-term follow-up, case report.

Katrina,Andrejeva[2];Lauma,Saulīte[2];Anda,Mindere Gūbele[3];Anda,Brinkmane[3];Egita,Benefelde[1]
[1]Department of Pediatric Dentistry, Riga Stradins University
[2]Department of Endodontics, Riga Stradins University
[3]Department of Conservative Dentistry, Riga Stradins University

AIM
To present a case of previously successful RET in d22 with 6-year clinical and radiographic follow-up that developed apical resorption followed by chronic apical periodontitis after orthodontic intervention.

CASE PRESENTATION
An 8 year-old female patient, with a history of complete intrusive maxillary deciduous incisor trauma at age of 1, damaging permanent teeth germs, followed by orthodontic extrusion of central maxillary permanent incisors, was referred for further endodontic treatment of immature d22 presenting with pulp necrosis and symptomatic AP. After obtaining parental consent RET was performed following ESE guidelines published in 2016. [1] Annual follow-up visits demonstrated complete healing of the periapical lesion, dentine wall thickening and apical formation. Orthodontic treatment was performed during the follow-up period. Four years later apical resorption and widening of PDL were noticed in dd21,22. On a five-year recall d22 was asymptomatic, but continuous apical resorption and recurrent apical lesion had appeared. d22 was reexamined during retreatment visit, showing no signs of secondary caries, MTA was hard, with no discoloration, noticeable vestibular enamel crack, PDL probing was WNL. Due to neo-calcified tissues throughout the canal and small apical diameter, a decision was made to perform conventional RCT instead of RET.

DISCUSSION
Long-term follow-up results are questioning the stability of the tissues involved in REPs, their ability to resist external stimuli, and their immune competency. [2] Although primary and secondary RET goals were reached, orthodontic impact is unpredictable and hasn't been extensively studied.

CONCLUSION
Development of guidelines for such cases is necessary as the number of RET treatments are increasing, but little is known about the effect of orthodontic treatment on regenerated tissues. Continuous reporting of long-term complications is crucial to determine best guidelines for orthodontic management of previously RET treated teeth.

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Elimination of the enamel defect of the 11th tooth affected by hypomineralization with the subsequent attachment of caries (as a result of the trauma of temporary tooth 51), by the Icon system and restoration with a composite without preparation

Kateryna,Zhmurko[1,2,3,4,5,6,7]
[1]Paediatric dentist
[2]Member of Ukrainian Academy of Paediatric Dentistry
[3]Member of European Academy of Paediatric Dentistry
[4]The author of courses on Paediatric dentistry
[5]The author of courses on dental treatment for pregnant women
[6]The author of courses on dentist assistant
[7]The author of publication in magazine "Dentistry News"

Background: Hypomineralization of permanent tooth enamel is a disease that is becoming widespread among permanent tooth diseases in children. Hypomineralization of tooth enamel 11, followed by caries attachment due to trauma to 51 teeth (one of the most likely causes)
The method of treatment of hypomineralization by the Icon system - allows you to eliminate the lesions and restore the aesthetics and function of the frontal teeth in children.
(child age 8 years)
Case presentation:
Parents complained about the injury of 51 teeth in a 3-year-old child. Trauma 51 teeth without displacement. 51 teeth were observed and X-rayed every three months for 2 years. After the physiological resorption of the root of tooth 51 and the eruption of tooth 11-, the lesion of tooth 11 was revealed by gyromineralization, followed by the addition of a carious process
Using the Icon system, 3 sessions were eliminated defect tooth enamel 11 and restored by composite.
Results:
Thanks to the use of the icon system, enamel, which is affected by hypomineralization and caries, was eliminated three times, and subsequently the composite was restored to recreate the anatomical shape of tooth 11.
Conclusions:
The icon system in combination with composite restoration can restore even a very deep enamel defect that arose as a result of hypomineralization and subsequent restoration of the vestibular surface of tooth 11 by composite restoration without preparation will be an ideal solution both functionally and aesthetically.

REPEATED DENTAL TRAUMA IN PAEDIATRIC PATIENT WITH INCREASED OVERJET: A CASE REPORT

Meghana,Magatala[1,2];Lochana,Ramalingam[1,2];
Giselle,D'Mello[1];Gwendolyn,Huang[1];
[1]Department of Dentistry,The Royal Children's Hospital,Melbourne
[2]Melbourne Dental School,The University of Melbourne

REPEATED DENTAL TRAUMA IN PAEDIATRIC PATIENT WITH INCREASED OVERJET: A CASE REPORT

Meghana Magatala[1], Gwendolyn Huang[1], Giselle D'Mello[1], Lochana Ramalingam[1]
[1]Department of Dentistry, The Royal Children's Hospital, Melbourne, Australia

Introduction: Paediatric patients with increased overjet are at an increased risk of traumatic dental injuries. This case highlights the complexities in managing these patients with repeat injuries during the healing period.

Case Presentation: A 7-year-old female presented to the Emergency Department of the Royal Children's Hospital following a fall, face first onto a waterslide. Clinical examination revealed severe intrusion with buccal displacement of the maxillary right (11) and left (21) central incisors with enamel-dentine crown fractures and buccal alveolar bone fracture. She displayed a Class II Division I incisor relationship with increased overjet and overbite. Teeth 11 and 21 were surgically repositioned, splinted and temporised under general anaesthesia. Both teeth displayed signs of periodontal healing at 2 and 4-week reviews. At the 8-week review, patient reported another fall resulting in the subluxation of tooth 11. At the 4-month review, patient reported being elbowed in the face resulting in lateral luxation of tooth 11. Tooth 11 subsequently developed pulpal necrosis with infection, hence root canal treatment was initiated.

Discussion: This case report highlights the increased risk of traumatic dental injuries faced by children with Class II incisor relationship. Although the initial healing of teeth 11 and 21 appeared promising, repeat trauma has compromised their long-term outcomes. Due to the complexities of replacing these teeth at such a young age, they should be maintained until a definitive orthodontic and prosthodontic treatment plan can be determined.

Conclusion & Clinical Relevance: Clinicians play an important role in advocating for early class II treatment in patients susceptible to dental trauma and reinforcing importance of reducing contact activities.

I confirm I have no conflict of interest.

Evaluating Outcomes: Tooth autotransplantation with Surgical guides, Specialized Burs and Donor Tooth Replicas Across Five Cases

Akira,Maeda[1,2];Taichi,Kasuga[1];Kohei,Shinmyozu[1]
[1]Shinmyozu dental clinic -Oral and maxillofacial Surgery-
[2]Womble Gate American Dentistry

Akira Maeda, Taichi Kasuga, Kohei Sinmyozu,
Shinmyozu dental clinic -Oral and maxillofacial Surgery-

Aim(s) of the cases or technique included in the poster
Tooth autotransplantation Success varies among dentists, due to the skill level and patient conditions. Ankylosis occurs in 4.2-18.2% and root resorption in 3-10% of cases, with extended surgery and donor tooth exposure time increasing these risks. Our presentation outlines clinic innovations that shorten surgery time and reduce complications, aiming to improve outcomes.

Methodology
For pre-surgical diagnosis, CT scans facilitated the simulation of surgically prepared recipient sites, alongside the creation of tooth replicas and surgical guides. The STL data of the donor tooth from CT scans was integrated into planned positions to assess its anatomical alignment and predict necessary bone reduction. Surgically recipient site preparation was precisely guided using specialized burs. This presentation showcases five cases, highlighting our clinic's efforts and advancements in this procedure.

Discussion
Pre-surgical simulations were pivotal in preventing postoperative complications, streamlining the surgical process, and reducing operation time. The use of donor tooth replicas minimized the extra-alveolar time of the donor's tooth, thereby preventing tissue damage.
Utilizing specialized burs significantly enhanced the recipient site preparation, leading to a more efficient procedure. Follow-up examinations from 6 months to 3 years post-procedure revealed no signs of infection, ankylosis, or root resorption in X-ray evaluations across all five cases. Patient satisfaction with the outcomes was universally high.

Conclusion & Clinical Relevance
These innovations contributed to shorter procedure times. Notably, the extraction of the donor tooth followed recipient site preparation using the donor tooth replica, minimizing donor tooth exposure time—a critical factor for the success of Tooth autotransplantation.

A statement regarding conflict of interest
No potential conflicts of interest were disclosed

Modern Approach in Dental Autotransplantation: A Pilot Case of Full Guided Surgery and positioning

Adel,Hamdani[1,2];Mélodie,Clerc[1,3,4];Nicolas,Obtel[1,2,3];
Brenda,Nguyen[1,2,3];Antoine,Samain[1,2,3];Aurélien,Bos[3];
Timothé,Debre[1,2,3];Thibault,Perez[1,2];Louis,Maman[1,2,3];
François,Ferre[1,2,3]
[1]AP-HP Sorbonne Université
[2]Hôpital Charles Foix
[3]Université Paris Cité
[4]Hôpital Rotschild

Title: Modern Approach in Dental Autotransplantation: A Pilot Case of Full Guided Surgery And Positioning

Authors: Adel HAMDANI, Melodie CLERC, Nicolas OBTEL, Brenda NGUYEN, Antoine SAMAIN, Aurélien BOS, Timothé DEBRE, Thibault PEREZ, Louis MAMAN, François FERRE

Affiliation:
AP-HP Sorbonne Université
Hôpital Charles Foix
Université Paris Cité

Aim of the Case: This case report aims to demonstrate the application and outcomes of employing implantology full guided surgery concepts in autotransplantation. By integrating advanced 3D planning and printing technologies, this method seeks to enhance procedural accuracy and patient outcomes.

Case Presentation: A 17-year-old patient presented with a tooth 46 in a root state. Panoramic and cone beam radiography identified tooth 48, at Nolla's stage 8, as suitable for autotransplantation. Using a combination of cone beam data and optical impressions, a 3D surgical guide was developed and printed alongside a surgical resin duplicate of tooth 48 and a positioning guide .
The procedure involved:
- Atraumatic avulsion of tooth 46.
- Precise bone preparation using guided surgery drills.
- Preparation validation using the surgical resin duplicate of tooth 28 and the positioning guide.
- Transplantation of tooth 48 using placement guide.
- Ensuring infraocclusion and stabilization turning the resin positioning guide into a soft splint.
- 1-year follow-up.

Discussion: Implementing implantology guided surgery principles in autotransplantation emphasizes precise planning and execution. This method reduced surgery time and improved healing outcomes, as evidenced by preserved pulp vitality, normal periodontal health, and tooth mobility at the 1-year follow-up.

Conclusion & Clinical Relevance: The case highlights significant advancements in dental surgery through the full guided surgical approach, offering a predictable, efficient, and minimally invasive option for autotransplantation. This method could set a new standard for this complex dental procedures.

Conflict of Interest Statement: The authors declare no conflict of interest related to this case study.

Management of Oroantral Communication through Autotransplantation of Maxillary Third Molar

Adel,Hamdani[1,2];Nicolas,Obtel[1,2,3];Brenda,Nguyen[1,2,3];Antoine,Samain[1,2,3];Mélodie,Clerc[3,4];Aurélien,Bos[3];Timothé,Debre[1,2,3];Thibault,Perez[1,2];Louis,Maman[1,2,3];François,Ferre[1,2,3]
[1]AP-HP Sorbonne Université
[2]Hôpital Charles Foix
[3]Université Paris Cité
[4]Hôpital Rotschild

Aims of the Case: This case aims to demonstrate the effective simultaneous management of oro-antral communication and dental rehabilitation through autotransplantation of a maxillary third molar. It highlights a common complication in maxillary molar avulsions and presents a novel approach to overcoming this challenge.

Case Presentation: A 16-year-old patient was evaluated for the extraction of an unrecoverable maxillary molar 16. Following panoramic and cone beam examinations, the autotransplantation of tooth 18 in place of 16 was decided. The procedure involved managing an oroantral communication detected after extraction of the tooth 16, using PRF (platelet-rich fibrin) for filling the communication, and performing a trans-sinus placement of tooth 18. The site preparation and healing processes were carefully monitored. At the one-year follow-up, the patient demonstrated positive pulp vitality, physiological mobility, and dome-shaped bone healing around the roots of the transplanted tooth, indicating a successful autotransplantation with comprehensive recovery.

Discussion: The occurrence of oroantral communication in posterior maxillary extractions and its management without postponing the autotransplantation procedure are discussed. The case highlights the feasibility of trans-sinus transplant positioning, facilitating dome-shaped bone healing, supported by the sinus membrane and periodontal ligament.

Conclusion & Clinical Relevance: The management of oroantral communication and reduced bone volume in the posterior maxillary site through dental autotransplantation is not only feasible but also effective. This complex surgical procedure requires thorough preoperative evaluation to ensure success and minimize potential complications. The one-year follow-up results underscore the technique's ability to achieve not only structural but also functional success, including pulp vitality and tooth mobility, setting a precedent for handling similar cases in dental practice.

Conflict of Interest Statement: None declared.

Turning Setback into Success: A Case Report on Delayed Endo-Perio Lesion Post-Trauma in a Young Patient with 1 Year Follow-Up

Othman,Noorfarahain[1,2];Rohaida,Abdul Halim[1,2,3,4]
[1]Dr, Centre of Paediatric Dentistry and Orthodontic Studies, Universiti Teknologi MARA, Selangor
[2]Associate Prof, Centre of Paediatric Dentistry and Orthodontic Studies, Universiti Teknologi MARA, Selangor

Keywords: Endodontic–periodontic lesion; endodontic treatment; periodontitis; untreated dental trauma

The intricate interplay between root canals and periodontal structures facilitates the for bacterial migration, fostering the development of endo-perio lesions. Given the diagnostic and therapeutic challenges, timely endodontic intervention is crucial for favourable treatment outcomes. This case report delineates a poignant instance of acute facial cellulitis following dental trauma, characterised by pain, swelling, tooth mobility, and a periodontal pocket in the upper right lateral incisor. Emergency measures encompassed endodontic treatment and splinting, culminating in successful clinical outcomes during subsequent evaluations at one month, three months, and one year. This underscores the genesis of chronic periradicular periodontitis from a primary pulpal infection induced by trauma, emphasising the primacy of endodontic care. Prognosis hinges on the extent of periodontal involvement, with paediatric patients often exhibiting expedited periodontal healing and superior treatment responses compared to adults. Conversely, delayed intervention may precipitate exacerbated periodontal pathology and premature tooth loss in young individual.
Conclusion: A nuanced comprehension of pathogenesis, clinical manifestations, and radiographic presentations findings is crucial imperative for adept appropriate management of endo-perio lesion cases.

Late Management of Dental Trauma with Alveolar Ridge Preservation in an Anxious Child: A Case Report

Rohaida,AbdulHalim[1,2];Nur Amalina,Asmad[1];
Fazlieha,Kamaruddin[2];Erni,Noor[2]
[1]Centre of Studies for Paediatric Dentistry & Orthodontics, UiTM
[2]Centre of Studies for Periodontology, UiTM

Keywords:ARP; complicated crown fracture; untreated dental trauma; clinical hypnosis

Late Management of Dental Trauma with Alveolar Ridge Preservation in an Anxious Child: A Case Report

Rohaida Abdul Halim [1], Nur Amalina Asmad [1], Fazlieha Kamaruddin [2], Erni Noor [2]
[1] *Centre of Studies for Paediatric Dentistry & Orthodontics, Faculty of Dentistry, Universiti Teknologi MARA*
[2] *Centre of Studies for Periodontology, Faculty of Dentistry, Universiti Teknologi MARA*

Introduction:
Untreated dental injuries in children may lead to adverse outcomes, often necessitating tooth extraction. Subsequent alveolar ridge resorption can hinder future oral rehabilitation efforts, emphasising the need for multidisciplinary management to establish an optimal foundation for future prosthodontic therapy. Alveolar ridge preservation (ARP) stands as a potential solution to mitigate these consequences. Various biomaterials have been introduced for alveolar socket preservation following tooth extraction. However, its implementation in paediatric patients poses unique challenges, including the associated cost and management of dental anxiety during treatment.

Case report:
This case report outlines the management of a complicated crown fracture in a teenage boy affecting tooth 21, necessitating extraction followed by alveolar ridge preservation (ARP) due to a reduced crown-to-root ratio and compromised coronal seal. Due to financial constraints, a strategic approach was taken, utilising autogenous dentine and platelet-rich fibrin in the ARP protocol. The patient's alveolar socket was filled with crushed dentine particles mixed with plasma at the apical third, a plasma-rich-fibrin (PRF) plug inserted in the middle third of the socket, and covered with a collagen plug in the coronal third. A comprehensive two-year follow-up demonstrated sustained alveolar ridge height. To alleviate the patient's anxiety, clinical hypnosis techniques were employed during the procedure to regulate the patient's breathing and eventually induce relaxation.

Discussion:
Using autogenous tooth grafts, specifically dentine, presents a compelling and cost-effective solution for late-stage dental trauma treatment. This innovative approach has shown remarkable promise in bone regeneration through ARP techniques. Furthermore, clinical hypnosis emerges as an appealing and economically viable alternative for effectively managing patient anxiety during procedures.

Conclusion:
Implementing advanced, comprehensive, integrated care with appropriate behaviour management techniques such as clinical hypnosis can yield positive results and a favourable experience for the child.

Conflict of interest
Authors declare that there are no conflicts of interest.

Management of multiple complicated dental fractures with delayed presentation in a growing adolescent

Hessa,Albader[1]
[1]Kuwait Board in Pediatric Dentistry, KIMS, Kuwait

Author: Hessa AlBader
Kuwait Board in Pediatric Dentistry, Kuwait Institute for Medical Specializations, Kuwait

Aim:
To discuss the management of delayed presentation of multiple dental fractures in a growing adolescent.

Case Presentation:
A 15-year old male presented 4 days after sustaining multiple dental injuries to three maxillary incisors as he tripped in the street. 11 sustained an enamel fracture, 21 sustained a complicated crown fracture with a pin-point pulp exposure, while 22 sustained a complicated crown-root fracture. 21 received a Cvek's pulpotomy with non-setting calcium hydroxide followed by a resin modified glass ionomer liner and restored by composite restoration. The crown-root fracture of 22 extended subgingivally in the palatal surface. Electrocautery of the palatal gingiva of 22 was performed to assess extent of root fracture which was found to be above bone level and the tooth was clinically restorable. A root canal treatment and fiber post-retained composite build-up was then performed. 11 was left to monitor as the fracture was very minimal. The case was followed up for 1-year then the patient was discharged to his general dentist for follow-up.

Discussion:
Delayed presentation of complicated crown and crown-root fractures can present as a challenge. Cvek's pulpotomy has been proven to be a successful treatment option for pulpally exposed teeth following dental trauma. Crown-root fractures can be challenging where restorability is compromised. Several treatment options are available such as intentional replantation, root submergence and replacement with a prosthesis, however, the fractured tooth was restored following gingivectomy of the palatal gingiva, root canal treatment and fiber post-retained composite buildup.

Conclusion:
Regardless of the challenge of restoring complicated crown and crown-root fractures, restoring fractured permanent incisors with pulp therapy and composite restorations can be a successful treatment option.

The author has no conflict of interest to declare.

UNEXPECTED HARD AND SOFT TISSUE OUTCOMES IN A PATIENT WITH PERMANENT DENTAL TRAUMA: A CASE REPORT

Sarah,Venkataraman[1,2];Gwendolyn,Huang[1];
Giselle,D'Mello[1];Luke,Maloney[1];Lochana,Ramalingam[1]
[1]Royal Children's Hospital
[2]The University of Melbourne, Australia

Sarah Venkataraman1, Gwendolyn Huang1, Giselle D'Mello1, Luke Maloney1, Lochana Ramalingam1
1Department of Dentistry, The Royal Children's Hospital, Melbourne, Australia

Aim: A comprehensive soft and hard tissue assessment is crucial to optimal patient outcomes when managing orofacial trauma. Clinicians must ensure a thorough evaluation and follow up of injuries to address complications and minimize harm.

Case Presentation: A 13-year-old girl presented to the Royal Children's Hospital after the crossbar of a soccer goal she was swinging off dislodged and hit her face. Teeth #12 and 21 sustained subluxation and enamel crown fractures. Tooth #11 was laterally luxated with palatal displacement and slight mobility. Tooth #22 sustained an enamel crown fracture without displacement. There was a deep, intra-oral laceration on the right buccal mucosa. The injured teeth were repositioned, temporised and splinted under local anaesthetic and the laceration sutured.

Eight days later, she presented with facial cellulitis secondary to infection from the laceration which was then deemed through and through, albeit difficult to appreciate at her initial presentation. The infection was managed surgically under general anaesthesia and she was discharged on oral antibiotics two days later. Review of the hard tissues revealed continued tenderness and a CBCT 8 weeks post injury identified periapical radiolucencies with teeth #12,11 and 21 and root resorption of teeth #12 and #11. All teeth underwent pulp extirpation and are currently stable 6 months post injury.

Discussion: This case highlighted the importance of a thorough soft tissue examination and ongoing review of all hard tissue injuries as root resorption is an unexpected finding in teeth that have been subluxated.

Conclusion & Clinical Relevance: Though every effort is made to thoroughly assess and manage dental injuries, unexpected complications can occur and require appropriate management.

I confirm I have ethical clearance for my abstract and have no conflicts of interest.

Developmental Disturbances of Permanent Teeth Due to Trauma of Primary Teeth: Case Report

Jihwan,Seo[2];Sang Tae,Ro[2];Yong Kwon,Chae[1,2];
Ko Eun,Lee[1,2];Mi Sun,Kim[1,3];Ok Hyung,Nam[1,2];
Hyo Seol,Lee[1,2];Sung Chul,Choi[1,2]
[1]Pediatric, School of Dentistry, Kyung Hee University
[2]Pediatric, Kyung Hee University Dental Hospital
[3]Pediatric, Kyung Hee University Dental Hospital at Gangdong

Aim:
The aim of this clinical case report is to demonstrate that developmental disturbances in permanent teeth due to early trauma to primary teeth can have a favorable outcome with a multidisciplinary treatment approach.
Case Presentation:
A 21-month-old boy visited with complex traumatic dental injuries (TDIs) on left maxillary part resulting from a fall from the chair. Radiographic examination showed #61,62,63 intrusion and displacement of the permanent maxillary incisors. Subsequently, #61,62 and 63 were extracted. Regular follow-up radiographic examinations were conducted. A cone-beam computed tomographic view revealed developmental disturbances of #21 and 22. #21 was surgically extracted and after the eruption of #22, a resin restoration was performed on the defective area. Nine days later, the patient came with spontaneous pain on #22. Revascularization was performed, and a follow-up radiographic examination showed a normal root formation of #22.
Discussion:
Odontoma-like malformation is an uncommon consequence of developmental disturbance, and observed as a radio-opaque mass on x-ray images resulting from intrusion and avulsion of primary teeth. During the earliest period of teeth formation, trauma can directly impact the tooth germ or damage the matrix of enamel due to severe intrusion of primary teeth. Restorative treatment, including root canal treatment, may be necessary to treat tooth malformation. Depending on the severity of teeth disturbance, surgical extraction, orthodontic and prosthetic interventions may also be required.
Conclusion & Clinical Relevance:
The developmental disturbances should be diagnosed early through regular follow-up check, and appropriate therapeutic interventions should be delivered in a timely manner.
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TRAUMATIC EXPOSURE OF UNERUPTED INCISORS: A CASE REPORT

Luke,Moloney[1];Grace Wu[1,2];Narisha,Chawla[1];
Huang,Huang[1]
[1]Royal Children's Hospital
[2]The University of Melbourne

TRAUMATIC EXPOSURE OF UNERUPTED INCISORS: A CASE REPORT
Grace Wu1, Narisha Chawla1, Luke Moloney1, Gwendolyn Huang1

1 Department of Dentistry, Royal Children's Hospital, Melbourne, Australia
I would like to submit my abstract for: A travel bursary or award
Please fill in your IAPD Membership ID: tgwu08@gmail.com

Introduction: The diagnosis of dental trauma is commonly based on the IADT trauma guideline. However, there may be cases that do not fall into the categories of common trauma diagnosis. Traumatic exposure of unerupted incisors is one of them.

Case report: This case report describes the presentation and management of a traumatic exposure of unerupted Teeth 11, 21.
A fit-and-healthy 7-year-old girl presented to the Emergency Department of the Royal Children's Hospital due to dental trauma sustained from a head collisio. Prior to dental assessment, the impression of the dental trauma was intrusion of upper central incisors. History and pre-injury photos revealed that teeth 11, 21 were unerupted prior to injury. The dental trauma caused gingival laceration and premature exposure of 11 and 21 with associated mobility. Maxocclusal radiographs identified immature root formation of 11, 21 with no sign of displacement. The dental trauma was managed with suturing of gingival laceration.

Discussion: Traumatic exposure of unerupted incisors is rarely reported in the literature. It was unknown whether the mobility of exposed 11, 21 was due to subluxation or their immature status.

Conclusion: The clinical presentation of traumatic exposure of unerupted incisors may resemble intrusion; therefore, full clinical history is paramount to trauma diagnosis.

I confirm I have received ethical clearance for my abstract and confirm I have declared my conflict of interest: Yes
Disclosure of Interest: None Declared

Digital simulation extends the indications in autotransplantation an impacted wisdom tooth.

Min-Chia,Chen[1,2];Kao,Chun-Chieh[1,2]
[1]Anshin Starlit dental clinic
[2]Private clinic

Keywords: Digital simulation, 3D reconstruction, impact tooth, autotransplantation

Min-Chia Chen, Chun-Chieh Kao
Private clinic (Anshin Starlit Dental Clinic), Taipei, Taiwan
Email: zackplanet@gmail.com

Aim:
Digital simulation extends the indications in autotransplantation an impacted wisdom tooth.

Case presentation:
A 32-year-old female came for help with right lower first molar, which persisted uncomfortable for several months. After clinical and x-ray confirmed the first molar shows endo-perio lesion with poor prognosis, extraction is the only option. At the same side there has a healthy impacted wisdom tooth, indicated for extraction too. Therefore, a CBCT was taken for further evaluating the situation. After 3D reconstruction and simulation, it shows the possibility to perform autotransplantation procedure clearly and safely.
Surgery was done under local anesthesia, the priblematic molar was separated into 2 pieces and extracted. Osteotomy was performed with a big round bur. The new socket was created and checked the fitness with a 3D printed #48 analog. After that, the impacted wisdom tooth was extracted gently from lingual direction just like the simulation plan. Emdogain was apply on the root surface, the donor tooth was well positioned into the surgical created socket. The buccal defect was grafting with xenograft and the tooth was fixated with suture. After 2 weeks, endodontic treatment was started for the donor tooth and the prothesis was finished after 6 months. 2.5 years later, the following visits shows the bone and PDL heals well with normal function and patient is satisfied.

Discussion
The impacted tooth usually is hard to extract, not to mention to be a healthy donor tooth to replace a missing tooth. Via digital tool to thorough assessment the possibility before surgical procedures, the autotransplantation can be done in a predictable and accurate way.

Conclusion & Clinical Relevance:
Digital way actually assists and extends the possiblities in autotransplantation procedure.

A statement regarding conflict of interest:
The authors have no conflicts of interest to declare.

Revitalizing Young Smiles: Decoronation and Fiber-Reinforced Composite Bridges in Managing Infraoccluded Tooth

Nabihah,Dziaruddin[1]
[1]Faculty of Dentistry, Universiti Malaya

Keywords:infraocclusion, paediatric, decoronation, fiber-reinforced composite bridges

Aim: This case report discusses the management of an ankylosed tooth with evidence of infraocclusion following a history of tooth avulsion, aiming to preserve alveolar bone levels and restore aesthetics using the decoronation technique in a growing patient.
Case Presentation: A 12-year-old patient presented with a noticeably shorter upper front tooth, resulting from the delayed replantation of avulsed tooth 11, which had a 4-hour extra-oral dry time two years prior. Tooth 11 underwent endodontic treatment due to infection-related root resorption. Subsequently, the patient was consistently monitored for 18 months, at which point signs of replacement resorption were detected. A decoronation procedure was performed on the ankylosed tooth, followed by the immediate placement of a fiber-reinforced composite bonded bridge (FRCBB), utilizing the decoronated crown of tooth 11 as the pontic. The post-operative period was uneventful, and the patient healed well.
Discussion: Avulsed teeth with prolonged dry times are at high risk for replacement root resorption following significant damage to the periodontal ligament. This leads to compromised alveolar bone growth, vertical bone deficits, infraocclusion, and aesthetic challenges. Decoronation, a technique introduced by Malmgren et al. in 1984, addresses these issues by removing the crown of an ankylosed tooth and promoting new bone development while preserving the ridge width and vertical height. This treatment facilitates future prosthetic rehabilitation, allowing for implant placement after growth completion with improved esthetic outcomes and predictability. FRCBB offers a suitable aesthetic outcome and function as an interim solution, bridging the gap until the patient is ready for permanent restorations.
Conclusion and Clinical Relevance: This case highlights the successful management of an infraoccluded tooth with decoronation, preserving alveolar bone integrity and providing an aesthetic and functional temporary solution with FRCBB, paving the way for future permanent restorative options.
Conflict of Interest Statement: No conflicts of interest to declare.

Autotransplantation of teeth with mature apex - is elective root canal mandatory?

Jen-Ti,Hsieh[1,2,3]
[1]Queensland OMS
[2]Woolloongabba Oral Health Centre
[3]Logan hospital

Keywords:autotransplantation, mature apex, adult

Autotransplantation of teeth with mature apex – is elective root canal therapy mandatory?

Autotransplantation is now a well-accepted treatment option for replacement of missing or unsalvageable teeth. The use of a donor tooth with open apex is preferred because of the possibility for revascularization of the pulp. Traditionally, elective root canal therapy is recommended for autotransplantation of teeth with mature apex either prior to or shortly after autotransplantation. However, this is associated with increased cost to the patients and the need for additional treatment may deter patients from choosing autotransplantation as their treatment.

A case series will be presented for autotransplatation using donor teeth with mature apex without elective root canal therapy. Two major groups of patients will be discussed. The first group of patients are teenagers or young adults with impacted canines or incisors. The second group of patients are skeletally mature adults. Follow up periods ranged between 1 to 6 years. One patient (14 years old) developed apical periodontitis and commenced root canal therapy at 9 months post autotransplantation. One patient (29 years old) showed response to electrical vitality testing at 4 months post autotransplantation.

The pulp is perhaps more resilient than what we believed. In the absence of clinical or radiological pathology, root canal therapy could be withheld in mature apex teeth undergoing autotransplantation. This will allow more patients, especially adults, to consider autotransplantation as a treatment option since the cost will be lower than an alternative such as implant supported crown whilst enjoying the benefits of faster healing time and proprioception with intact periodontal ligaments with autotransplantation.

The author has no conflict of interest to declare.

Dental trauma and its consequences: the delayed management and the advantages of leukocyte-and platelet-rich fibrin (L-PRF)

Natrah,Fuad[1,2];Panagiotis,Pitros[2,3];Eleni,Besi[2,4]
[1]Faculty of Dentistry, University of Malaya
[2]Edinburgh Dental Institute
[3]Private Practice limited to Oral Surgery, Cyprus, Greece
[4]Barts and The London School of Medicine and Dentistry

Keywords: Dental trauma, non-surgical root canal retreatment, apical surgery, L-PRF, inside/ outside bleaching

AIMS
To highlight the importance of periodic dental trauma review as well as the consequences of a delayed management of dental trauma which eventually led to a surgical intervention. This case report also aimed to demonstrate the advantages of Leukocyte-and platelet-rich fibrin (L-PRF) in the apical wound healing following apical surgery.

CASE PRESENTATION
A 60-year-old non-Caucasian female, presented at the Restorative Department, Edinburgh Dental Institute (EDI) complaining of pain, swelling and tooth discoloration from the upper front tooth. She experienced dental trauma approximately 25 years ago. Three months prior, when tooth 11 first started to show symptoms, her dentist completed root canal treatment (RCT). Her symptoms subsided after RCT, but returned a few months later, which she was then referred to the EDI. The suboptimal quality of the obturation necessitated non-surgical root canal retreatment. As for the tooth discoloration, inside/ outside bleaching with 10% Carbamide Peroxide was carried out. Unfortunately, the patient remained symptomatic, necessitating apical surgery. Due to the large periapical radiolucency, the apical surgery was performed with the incorporation of L-PRF membranes. Tooth 11 was then definitively restored with resin composite.

DISCUSSION
Dental trauma should be managed in a timely manner, to reduce undesirable complications and the complexity of treatment. Therefore, it is important that clinicians and patients understand the importance of the review appointments as recommended by the International Association for Dental Traumatology (IADT) 2020 guidelines. L-PRF was used to speed up wound healing and promote hard tissue deposition, due to the wealth of growth factors released (Chuokroun et al. 2001, Dohan et al. 2014). Tsesis et al. recommended guided tissue regenerative techniques with periapical radiolucencies larger than 10mm as the likelihood of healing reduces with an increase in the periapical lesion size (Tsesis et al. 2011, Wang et al. 2004). Evidently, at the 4-month review of this case, hard tissue healing was already noted. Due to the low bleach concentration, inside/outside bleaching was performed to manage the discoloration (Poyser et al. 2004).

CONCLUSION & CLINICAL RELEVANCE
Dental trauma needs to be managed in a timely manner to avoid the need for unnecessary invasive treatment. Additionally, L-PRF is a promising material to aid in periapical wound healing and hard tissue regeneration.

CONFLICT OF INTEREST
The authors explicitly mention no conflict of interest.

Occlusal Reconstruction with Autogenous Tooth Transplantation of Non-Functional Multi-Rooted Wisdom Tooth Simultaneous Sinus Lift Procedure; A Case Report with 19-year Follow-Up

Hiroyuki,Saida[1,2]
[1]Private Practice(SAIDA DENTAL CLINIC), Saitama, Japan
[2]General Dentistry, Tokyo Medical and Dental University, Japan

Keywords: Autogenous Tooth Transplantation with a crestal approach Sinus Lift,Long-Term Follow-Up

Occlusal Reconstruction with Autogenous Tooth Transplantation of Non-Functional Multi-Rooted Wisdom Tooth Simultaneous Sinus Lift Procedure; A Case Report with 19-year Follow-Up
Aim In cases where alveolar bone deficiency limits the implant placements, autogenous tooth transplantation could be a promising alternative, particularly when non-functional wisdom teeth are available. This approach leverages the regenerative potential of the periodontal ligament to establish enduring occlusal support.

Case Presentation A 36-year-old male smoker presented with multiple molar losses due to prolonged dental neglect, resulting in occlusal collapse. Attempts to restore the long edentulous molar region in the right maxilla with a removable denture were unsuccessful. A non-vital canine and severely impacted second premolar in the right maxilla made the clinical situation more complicated. Severe vertical bone loss near the maxillary sinus further complicated implant placement. Despite these challenges, autogenous tooth transplantation using a healthy lower wisdom tooth to the long edentulous molar region was performed, aiming to restore occlusal support. The procedure involved orthodontic and prosthetic treatments based on the transplanted tooth.
Conclusion Autogenous tooth transplantation was successfully performed in this case, even with the inadequate bone volume up to the maxillary sinus. Utilizing sinus lift with a crestal approach enabled the rehabilitation of stable vertical support in the molar region, facilitating effective occlusal reconstruction. After 19 years of follow-up, the transplanted tooth remains a reliable abutment for a fixed prosthesis, highlighting the enduring efficacy of this approach in providing long-term stable occlusal support.

The author reported no conflicts of interest related to this presentation.

Tooth autotransplantation and subsequent orthodontic treatment is effective for bone regeneration

Yoshiaki,Sato[1];Yusuke,Matsuzawa[2]
[1]Department of Orthodontics, Hokkaido University
[2]Oral and Maxillofacial surgery, Keyukai Sapporo Hospital

Keywords:autotransplantation, orthodontic treatment, bone regeneration

Purpose
The purpose of this presentation is to show tooth autotransplantation and subsequent orthodontic treatment is also effective for bone regeneration.

Case
A boy of 11-year old came to our hospital with a chief complaint of congenital missing of teeth and spaced-arch in the mandible. X-ray findings revealed no missing teeth in the maxilla, but congenital missing of the right first and second premolars and bilateral lateral incisors were found in the mandible. The treatment plan was as follows. 1. Autotransplantation of the upper right and left second premolars into the lower right bicuspids position. 2. Alignment of the lower arch. 3. Observation until completion of growth. 4. Surgical orthodontic treatment.
As for the autotransplantation of the right second and left second premolars, it was difficult to transplant them as is because the buccolingual diameter of the tooth root is larger than the buccolingual width of the alveolar bone, which is the autotransplantation site. Therefore, the upper right 2nd premolar rotated 90 degrees was transplanted to the mesial position of the right lower first molar. Then, rotated and aligned it 90 degrees correctly by orthodontic treatment. In addition, the upper left 2nd premolar was also transplanted in the same manner. We are currently waiting for the patient to finish growing, and will begin surgical orthodontic treatment.
Discussion
The advantages might be as follows.
1. The number of teeth in the maxilla and mandible became the same, which may eliminate the need for prosthetic treatment in the future.
2. Although the buccolingual width of the alveolar bone in the lower right premolar region was originally thin, sufficient alveolar bone was secured by the autotoransplantation and orthodontic rotation of the teeth.
Conclusion
Tooth autotransplantation and subsequent orthodontic treatment is effective for bone regeneration.

There are no conflicts of interest in this presentation.

Re-establishment of Occlusal Support with Fixed Prosthetic Using Multiple Autogenous Transplantation : Consideration of Width of Donor Tooth and Alveolar Crest

Yoshiyuki,Iwabuchi[1]
[1]Hidamari Dental Clinic

Keywords: Multiple Autogenous Transplantation

Currently, autogenous transplantation is a well-established treatment option for single extraction sites in both removable dentures and fixed prosthodontics, along with dental implants. However, for multiple missing posterior molars, autogenous transplantation is generally not recommended. Consequently, removable dentures and dental implants are frequently utilized, but they can present challenges such as discomfort and compromised chewing efficiency with dentures, and increased biting force on opposing teeth with implants. To address these challenges, re-establishing occlusal support through autogenous transplantation of non-functional wisdom teeth or even the mesial root of the first molar offers a viable alternative, potentially delaying the need for implant placement.
Case Presentation: A 67-year-old female presented with a missing tooth (#35) and a vertical root fracture in the mesial root of #36, rendering it an unreliable abutment for fixed prosthesis. Consequently, the mesial root of #36 was autotransplanted to the site of #35, rotated 90 degrees to fit the width of the alveolar ridge. Additionally, a non-functional wisdom tooth (#48) was autotransplanted to the extracted site of #36. To restore occlusal support with a fixed prosthesis, #35 and #36 were connected. Furthermore, a unique technique utilizing dental replicas produced by a 3D printer was employed to facilitate the insertion of the donor tooth, reducing damage to the remaining periodontal ligament cells.
The authors declare no conflicts of interest related to this presentation.

Crash, Bang, Covid : Long-term management of severe dental trauma.

Carly,Dixon[1,2];Barry,Siobhan[1,2]
[1]University of Manchester
[2]Manchester University Foundation Trust

Aims: To highlight the longitudinal management of complex multiple traumatic dental injuries in the developing dentition.

Case Presentation
A 10-year-old-boy presented to the paediatric dentistry department having sustained complex dental trauma the previous day whilst at a swimming gala. He had been initially treated by an emergency dentist, who reimplanted and splinted an avulsed UR1.

On examination, he presented in the mixed dentition which was clinically caries free on a background of a class 1 occlusion. A composite splint was present UR2-UL2. Medical history was non-contributory.

Diagnoses included:
- UR1 Avulsion with extra-oral dry time of 1hr and enamel dentine (ED) fracture
- UR2 Concussion Injury
- UL1 mid-third horizontal root fracture non-displaced
- UL2 Mild Intrusion 3mm
- LR2 Uncomplicated ED fracture
- Lacerations due to buccal mucosa due to defective immediate splint.

Immediate management included the replacement of the existing splint UR1 with a Titanium Trauma Splint for four weeks. UR2 was excluded from the splint. LR2 was restored. UL2 was allowed to re-erupt and UR2 and UL1 treated conservatively. UR1 was extirpated at 10 days. Mid-term management included obturation and restoration of UR1 to camouflage minimal infraocclusion. The Covid pandemic resulted in the cessation of routine recalls. Eighteen-months later, UR1 demonstrated increased infraocclusion (3mm). Decoration was undertaken under local anaesthetic, and UR1 was replaced with a removable appliance.

"Deciduous teeth : A Beautiful Savior"

Shivani,Singh[1]
[1]FODS, King George

Author:

Dr. Shivani Singh,
Junior Resident 1
FODS, King George's Medical University, Lucknow

Aim:

Management of a traumatized and compromised permanent maxillary central incisor using a biological post.

Case Presentation:

A patient aged 12 reported to the OPD with a history of pain in 11 due to dental trauma 5 years ago. The patient was planned for an endodontic procedure and post-fabrication after obtaining an impression, followed by the placement of the customized and sterilized biological post (extracted 63).

Discussion:

The biological post was preferred as it is a feasible option for strengthening root canals and aids in:

1. avoiding excessive strain on the dentinal walls,
2. exhibiting complete biocompatibility and adapting to conduct configuration;
3. better post retention in comparison to prefabricated posts;
4. exhibiting resiliency equivalent to that of the original tooth;
5. superior bonding to composite resin and tooth structure;
6. Economical.

Conclusion and Clinical Relevance:

Exposed to occlusal stresses, steel and titanium (higher modulus of elasticity) result in stress concentration at the interface between the tooth restoration and an increased risk of tooth fracture, while fiber post (lower modulus of elasticity) experiences debonding.
Thus, using a properly sterilized extracted tooth post as an allograft, the resiliency and strength of the root dentin can be matched, and better masticatory forces can be distributed. Customized usage of anatomic waste for the benefit of paediatric patients can improve treatment regimens on a clinical level.

The author declare that they have no conflict of interest.

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Management of Complex Fractures in Upper Central Incisors

Marlene,Yu[1];Lochana,Ramalingan[1];Giselle,D'Mello[1];Luke,Moloney[1]
[1]Royal Children's Hospital, Melbourne Australia

MANAGEMENT OF COMPLEX FRACTURES IN UPPER CENTRAL INCISORS

Marlene Yu, Lochana Ramalingam, Giselle D'Mello, Luke Moloney
Department of Dentistry, Royal Children's Hospital, Melbourne, Australia

Introduction:
Traumatic dental injuries are common in children and young adults, with root fractures occurring in 0.5-7% of cases[1]. Among these, 34% involve the apical third of maxillary permanent incisor roots. This case describes the management of a complicated crown-root fracture of tooth #11 and oblique horizontal root fracture in the apical third of tooth #21.

Case:
A fit and healthy 12-year-old male presented to the Royal Children's Hospital Emergency Department after colliding face first onto concrete when he fell from his scooter. Clinical examination revealed a complicated crown fracture involving pulp, dentine, and enamel on tooth #11 and part of the mesial fragment was lost and unaccounted for. The remaining mesial crown fragment in situ was mobile with the fracture involving the palatal aspect and extending subginigval.
Tooth #21 sustained an enamel-dentine fracture at the incisal edge and had grade I mobility.
Radiographic examination revealed mature apices in both teeth. Radiographically tooth #11 exhibited a crown-root fracture and tooth #21 displayed an oblique horizontal root fracture at the apical third and diastasis of 1.5mm between apical and cervical fragments.
Treatment involved splinting of teeth #13-23 for two weeks. After three months, tooth #21 showed signs of pulpal necrosis of the cervical fragment, necessitating extirpation and dressing with Odontopaste*. Tooth #11 was diagnosed with pulpal necrosis and apical periodontitis after 14 months and has undergone endodontic treatment. Tooth #21 has been planned for obturation with a tricalcium-silicate material (Biodentine), 22 months after the original trauma.

Discussion: Treatment of horizontal root fractures in the apical third may be managed with long-term monitoring and review, necessitating treatment only when clinically and radiographically indicated.

Conclusion and Clinical Relevance: Comprehensive treatment planning for young patients requires clinical and radiographic examination and long-term monitoring, particularly as maxillary anterior teeth are in the aesthetic zone.

*Odontopaste: zinc oxide-based root canal paste, 5% clindamycin hydrochloride, 1% triamcinolone acetonide

I confirm I have received ethical clearance for my abstract and confirm I have declared my conflict of interest: Yes
Disclosure of Interest: None to declare

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Use of prefabricated functional appliances(PFA) on a child with subcondylar and parasymphysis fracture: a case report

Suhae,Kim[1];Taeseung,Jeong[1];Jonghyun,Shin[1];Eungyung,Lee[1];Soyoung,Park[1]
[1]Pusan National University Hospital

Introduction
The condyle, which is part of TMJ(temporomandibular joint, is crucial for mandible movement, mastication, and speech. The subcondyle, being fragile due to anatomy of the mandible, often is treated in a conservative way for fractures in pediatric cases. Recommendations include soft diets and removable occlusal splints to prevent direct condyle-joint contact. Here, a case introduces using a PFA(prefabricated functional appliances) for a patient with a subcondylar fracture.
Case representation
A 5-year-old girl suffered fractures in the left para-symphysis, both subcondyle, and a crown fracture with pulpal exposure of both mandibular first deciduous molar after a scooter fall. The subcondyle fractures led to an open bite. Open reduction and internal fixation(ORIF) were performed in the para-symphysis area under general anesthesia. After intermaxillary fixation was removed, a PFA (EF-T slim) was used for 2 hours daily and during sleep. After partial mouth opening recovery, pulp treatment for the tooth fracture was performed. Two months post-ORIF, the open bite improved, and after three months, the para-symphyseal plate was removed under general anesthesia.
Discussion
For the pediatric patient with a subcondylar fracture, a conservative treatment is favored over surgery. While devices like activators are often chosen for their ability to enhance the vertical dimension and guide maxilla-mandible relationships, their use can be challenging with uncooperative patients. An alternative, the PFA, avoids these challenges as it doesn't require impressions and is made of a soft material. In this case, the PFA prevented direct condyle-joint contact during subcondylar recovery. Also, PFA structure induces anterior bite into normal overjet and overbite compared to occlusal splint. Though limited to nighttime use, PFAs prove effective, especially in pediatric cases where other devices might face limitations.
Conclusion & Clinical Relevance
A PFA serves as a convenient and comfortable occlusal stabilizer for conservative treatment of subcondylar fractures in pediatric patients.
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Management of Traumatic Tooth Injury with Exposed Pulp: A Case Report

Yuichi,Yoneda[1]
[1]Asunaro D.C

Abstract:
[Case Summary]
An 18-year-old female presented with a chief complaint of a chipped upper front tooth (#11#21) following a bicycle accident while commuting to school. The patient arrived at the hospital 4 hours post-injury, revealing exposed pulp in the fractured tooth.

[Treatment Approach]
After explaining the significance of pulp preservation to the patient and her mother, their consent was obtained. A decision was made to perform a partial pulpotomy using MTA to preserve the exposed pulp. Crown restoration was subsequently completed with the following approach.

[Discussion]
The presence of a fractured piece allowed for the restoration of aesthetic appearance, as the pre-injury status was discernible.
The goal is to prioritize conservative treatments that preserve dental pulp whenever possible, rather than opting for root canal treatment hastily, and to minimize excessive restorative procedures. After myelination, the patient remained asymptomatic, and dental X-rays revealed no abnormalities, indicating a favorable prognosis.

"COI"
I have no financial relationships to disclose.

Management and complications of avulsion and extrusion injuries in adolescence undergoing active orthodontic treatment- case report

Sherifa,Almukhaizeem[1];A.,Dutta[2]
[1]Kuwait Board in Paediatric Dentistry, Kuwait institute for Medical Specialisations, Kuwait
[2]University Hospital of Wales, Cardiff

Management and complication of avulsion and extrusion injuries in an adolescent undergoing active Orthodontic treatment – A Case Report
S.Almukhaizeem, A.Dutta
Kuwait Board in Paediatric Dentistry, Kuwait Institute for Medical Specializations, Kuwait.
University Hospital of Wales, Cardiff.

Aim: To understand the consequences for delay dental treatment in multidisciplinary trauma cases.

Case Presentation: A healthy adolescent participated in a flight that resulted in severe dental trauma to his front teeth. The upper right 1 was avulsed and the upper right 2 was extruded. Both were held by the orthodontic wire intra-orally as the patient was undergoing active treatment. Both UR1 and UR2 were repositioned by the pediatric department and no further endodontic treatment was provided. Root canal therapy was immediately initiated 5 months' post injury as inflammatory related resorption was radiographically evident and a buccal swelling. Calcium hydroxide was used as an intra-canal medicament for a period of one month. Apexification was the treatment of choice in the case, using Total Fill Bioceramic Root Repair putty material followed by back fill obturation and composite restoration.

Discussion: Avulsion and extrusive luxation are considered serious dental injuries that require prompt management to improve prognosis. Such management includes recognition of the type of injury, optimal repositioning and endodontic intervention within 10 days. In this case no endodontic treatment was provided after repositioning. This could have been due to incorrect diagnosis, as the UR1 was kept intra-orally by the orthodontic wire which may have led to the diagnosis of extrusion rather than avulsion. Another explanation could be related to the multidisciplinary nature of the dental trauma.

Conclusion: Regardless of the reason, delayed endodontic intervention has affected the tooth's long-term prognosis despite the disappearance of swelling and other clinical signs and symptoms the UR1 & 2 remain guarded. For that reason, understanding when to refer and when to treat is critical between practitioners.

The authors declare no conflict of interest.

"Management of horizontal root fracture in the middle third in – clinical cases."

Malgorzata,Jamka-Kasprzyk[1];Anna,Jurczak[1]
[1]Jagiellonia University in Krakow

Keywords:dental trauma, horizontal root fracture, elastic splinting, pulp necrosis, endodontic treatment

Root fractures are lesions involving dentine, cementum and pulp. The highest incidence range of roots fractures is recorded in patients 16-20 years. Horizontal root fractures mainly affect the maxillary anterior region. Due to relatively rare occurrence of root fractures, they may be difficult to make appropriate diagnosis and treatment plan.
Keywords
dental trauma, horizontal root fracture, elastic splinting, pulp necrosis, endodontic treatment
Methods.
The clinical studies presents three patients :girl and two boys ,aged from 10 to 17,treated after horizontal root fracture located in 1/3 middle of roots central incisors. The patients -came to the department of pediatric dentistry to continue treatment after trauma. First aid was given in ambulance; the time of reporting to the clinic varied (2-8days). In each case it was necessary to change the tooth immobilization from rigid to semi-flexible and, if possible, reposition the fragments in the correct position. Satisfactory reposition wasn't possible in one case because long time after trauma-8days. Follow-up visits according to IADT guidelines Removing immobilization after 4 -8 weeks.
Results:
The tooth, the complete reposition of which was not possible, was endodontically treated in the coronal part due to inflammation and the occurrence of a fistula. One tooth root canal is obliterated. In two tooths pulp testing gives information about good vitality. One tooth's canal is obliterated. All presented cases, healing occurred, no inflammation signs around roots, good stabilization. Follow-up time from 2 years to 7 years after trauma.
Conclusions:
The treatment success is determined by the location of fracture line. Additionally the healing process depends on optimal fragments reposition an immobilization, regular clinical an radiological control, patients age, tooth mobility, degree of root formation, pulp condition, gap between fragments and time between trauma and treatment.

Management of Immature Maxillary Incisor with Inflammatory Root Resorption Caused by avulsion

Jen-Hao,Liu[1,2];Yi-Ling,Chen[1,2];Yuan-Ling,Lee[1,2]
[1]Division of Endodontics, Department of Dentistry, National Taiwan University Hospital
[2]Graduate Institute of Clinical Dentistry, National Taiwan University

Keywords:apexification, avulsion, external root resorption, immature tooth, intrusion, regenerative endodontic procedure

Aims: Many factors should be considered for management of avulsed immature permanent tooth with inflammatory root resorption to achieve successful outcome. **Case Presentation:** This case report presents a 9-year-old boy, who had immature tooth 11 with inflammatory root resorption and immature tooth 21 presenting a metallic percussion sound. About 3 months ago, teeth 11 and 21 had been replanted and surgical reposited into alveolar sockets due to avulsion and intrusion, respectively. Pulp necrosis of both teeth was confirmed by test cavity. Tooth 21 exhibited symptom resolution and the percussion sound returned to normal after total canal debridement following by apexfication. Tooth 11 demonstrated healing of periradicular radiolucency, cessation of root resorption and significant improvement of percussion and palpation pain to mild condition after total chemical root canal debridement using PUI with 2.5% NaOCl and the mixture of steroid and $Ca(OH)_2$ as intracanal dressing. Then, regenerative endodontic procedures (REP) of tooth 11 was performed. A 28-month recall radiograph revealed complete healing of the peri-radicular lesions with apical closure over both teeth and complete root formation with calcification of canal space in tooth 11. No subjective and objective symptoms were reported. **Discussion:** For tooth 11, intracanal medication of steroid was used to control root resorption progression and REP was performed to enhance the root growth in wall thickness and root length, considering the thin canal wall caused by external root resorption. **Conclusion:** In the avulsed immature tooth with inflammatory root resorption and pulp necrosis, using steroid as intracanal medication and performing REP to obtain solid root structure can be beneficial for achieving successful treatment outcome.

Six-year follow-up with CBCT and pulpal circulation measured by TLP after horizontal root fracture in a young permanent upper central incisor

Satoko,Kakino[1];Hiroaki,Ohki[1];Zhao,Li[1];
Yuko,Matsumura[1];Tsutomu,Iwamoto[1]
[1]Tokyo Medical and Dental University

Keywords: Transmitted-light plethysmography, pulpal circulation, horizontal root fracture, young permanent teeth

In this case report, we describe the 6-year follow-up of a horizontal root fractured young permanent incisor along with pulpal circulatory changes measured by transmitted-light plethysmography (TLP). TLP is a noninvasive and objective pulp vitality test that uses a 525-nm LED to assess the presence or absence of pulpal circulation. TLP amplitude is considered to reflect pulpal circulatory changes. The patient was a 10-year-old boy with a horizontal root fracture of the left upper central incisor (#21) and a crown fracture of the right upper central incisor (#11). Both traumatized teeth were immobilized using a wire-resin splint for three months. Three months after the injury, hard tissue healing of the root fracture was observed on radiographic examination. Pulp vitality was assessed by electric pulp testing (EPT) and TLP. Until two years after the injury, the TLP amplitude of #21 was lower than that of #11. After three years, the TLP amplitude of #21 recovered to the same level as that of #11, and a clear tooth plethysmogram was observed. #11 and #21 responded to EPT during the follow-up periods. Six years after the injury, CBCT imaging of #21 revealed small hard tissue healing, which united the apical and coronal fragments, along the crack line. The TLP changes throughout the observation period indicated that although the transient ischemia occurred in the early stage of the injury, the pulpal blood supply through the narrowing root canal continued during hard tissue healing, and revascularization to the coronal pulp occurred in the late stage of the injury. These findings suggest that TLP may reflect the healing process of dental trauma and that it is applicable for the diagnosis of pulp viability. The authors declare no conflicts of interest in association with the present study.

Autotransplantation to prevent progression of bilateral molar defects: report of a case.

Takanori,Nakamura[1]
[1]Nakamura Dental Clinic

Takanori Nakamura
Nakamura Dental Clinic

title
Autotransplantation to prevent progression of bilateral molar defects: a case report.

The patient was a 47 year-old man who presented with the chief complaint of inability to eat due to the detaching of the bridge in both upper right and lower left.
I planned to autotransplantation 28 teeth into the maxillary right defect and 38 teeth into the mandibular left defect. Because I thought that it would be possible to obtain bilateral molar occlusal support and prevent the progression of the defect in the future. In particular, the maxillary right side is close to the maxillary sinus, and I thought that an autotransplantation, which can be expected to regenerate bone vertically, is more suitable than an implant. The maxillary right side was implanted with a flapless and socket lift. The mandibular left side was also implanted with a flapless. 38 Because penetration of the root apex was difficult, we performed reverse root augmentation outside the oral cavity.

The stability of the molar may prevent the defect from progressing.
In the maxillary right side, bone regeneration is observed up to the apex of the root after socket lift. If there is a non-functioning wisdom tooth, there may be many advantages of autologous tooth transplantation to the defect.

I have no financial relationships to disclose.

Management of permanent central incisors with multiple dental trauma episodes in a young patient

Melissa,Khor[1]
[1]KK Women

Aims: This case presentation aims to describe management of dental trauma of permanent central incisors in a child with a previous history of trauma to the same teeth.

Case presentation: A 10-year-old boy presented following dental trauma to his upper right and left permanent central incisors (#11, #21). The diagnoses were: #11 buccal luxation, #21 root fracture with coronal fragment subluxation. On radiographic examination, #11 and #21 had mature apices, but #11 root length was shortened compared to #21 and there was pre-existing surface root resorption of #11 and #21. His mother recalled him sustaining dental trauma to #11 and #21 at 8 years old, but was unable to recall if they had been displaced or repositioned. #11 was repositioned with digital pressure and a composite resin splint was placed for four weeks. His mother was informed of the risk of pulp necrosis and subsequent possibility of inflammatory root resorption (IRR) leading to poorer prognosis of #11 and #21, however it was decided not to proceed with pulpectomy unless there were obvious signs of pulp necrosis. #11 and #21 remained non-responsive to cold and electric pulp tests and slightly tender to percussion until eight weeks post-trauma, with increased mobility. Subsequently, both responded to diagnostic tests and hard tissue healing was observed at #21 root fracture. At 1-year-3-months follow up, both remained vital.

Discussion: IADT guidelines suggest planning for root canal treatment of laterally luxated teeth with mature apices at two weeks post-trauma, to pre-empt pulp necrosis and possible IRR. This is especially important in a tooth with pre-existing root resorption, as such teeth would have a poorer prognosis should IRR develop. However, guidelines should be balanced with clinical judgement to avoid overtreatment.

Conclusion: Conservative management and closer recalls may help avoid premature initiation of treatment in a young patient.

Autotransplantation with Bone Augmentation in Hypodontia Patient

Thavamalar,Marimuthoo[1,2];Norma,Jamaludin[1,3];
Mimi Syazleen,Abdul Rahman[1,2]
[1]Ministry of Health, Malaysia
[2]Department of Pediatrics, Malacca General Hospital, Malacca
[3]Department of Periodontics, Klinik Pergigian Peringgit, Malacca

Keywords: Tooth autotransplantation, bone augmentation, hypodontia

Autotransplantation with Bone Augmentation in Hypodontia Patient

Thavamalar M [1] Norma J [2], Mimi Syazleen AR [1]
[1] *Department of Paediatric Dentistry, Malacca General Hospital, Malaysia*
[2] *Department of Periodontics, Klinik Pergigian Peringgit, Malacca, Malaysia*

Autotransplantation at a hypodontia region posts a greater challenge compared to replacement of poor prognosed tooth. Ridge at hypodontia area lacks alveolar bone and inadequate amount of bone height and width. The aim of this case presentation is to share method of autotransplantation at hypodontia region together with bone augmentation, to restore and preserve bone volume and the transplanted tooth. A ten years old boy presented with knife-edged upper anterior ridge due to missing upper permanent incisors and canines. At lower anterior segment, only permanent lateral incisors and lower right canine (LR3) were present and were unerupted and wedged between the primary teeth roots. His primary teeth were all present at lower arch with significantly good roots. Aesthetic and function was his main concern which has significantly affected the child's self-esteem. After discussing with multidisciplinary team, it was decided to autotransplant LR3 to the position of 12. Cone beam computed tomography (CBCT) was taken to assess the recipient and donor site. Replica of the donor tooth (LR3) was created. Socket was prepared and the tooth LR3 was transplanted at 12 position. Allograft was used to increase the bone width and volume at the recipient site, thus enclosing the root of the donor tooth completely. The tooth has since been retained with no complication for 18 months to date. Adequate amount of bone volume at the upper anterior ridge has enabled construction of removable prosthesis for the patient with good retention. Adequate amount of bone at recipient site is important to increase survival and success of donor tooth, which can be achieved by bone augmentation with meticulous and careful planning.
There's no conflict of interests regarding the sharing and publication of this case write-up.

Decoronation in upper permanent incisor suffered multiple dental injuries

Battsetseg,Tseveenjav[1]
[1]University of Helsinki

Keywords:multiple injury, decoronation, immature permanent incisor

Aim: is to evaluate success of decoronation -technique in the upper permanent incisor, suffered multiple dental injuries.
Case Presentation: Healthy boy had uncomplicated crown fracture in the tooth d. 11 at the age of 7. After 3-year follow-up apexification is performed to the tooth to induce the continued apical development of an incompletely formed root since the tooth diagnosed as infected. After one year from apexification, the tooth d. 11 suffered cervical fracture due to invisalign clear aligner treatment started in other dental service. The tooth was splinted with fiber reinforced splint.
Methodology: Flapless decoronation was carried out. Under local anesthesia, without the raising of a full-thickness flap, the dental crown was removed. The fractured root surface was evened, but not reduced, taking particular care of no touching the bone. Then, root canal obturation was removed and washed. Wound closure was obtained by coronal repositioning of the soft tissue and by placement of absorbable sutures, making sure close adaptation to the surrounding soft tissue to prevent further infection. Temporary solution for replacement of the tooth d. 11 was palatal bar connector fixed to the upper first permanent molars.
Results: In the 6-month-, 2-year & 3-year follow-ups, the region of decoronated tooth d. 11 remained without any objective and subjective symptoms. In addition, alveolar ridge of the region remained vertically and horizontally at the same level, compared to the contralateral tooth.
Discussion: Flapless decoronation procedure seems to be recommendable technique because of its minimally invasive nature for immature permanent anterior tooth, suffered multiple injuries.
Conclusion: Based on 3-year follow-up, flapless decoronation seems to be one of the possible treatment options for immature permanent anterior tooth, suffered multiple injuries.
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Management and Follow-Up of Complicated Crown-Root Fractures with Luxation of Permanent Maxillary Incisors: a case report of the multidisciplinary treatment with the 2-year follow-up

Daiva,Sabaliauskiene[1,2,3,5];Greta,Lodiene[1,2,3];
Darius,Loda[1,2,3];Egle,Zasciurinskiene[1,2,4];
Mindaugas,Starkus[5]
[1]Lithuanian University of the Health Sciences
[2]Faculty of Odontology
[3]Department of Dental and Oral Pathology
[4]Departament of Orthodontics
[5]UAB Odontologijos praktikos centras

Sabaliauskienė Daiva, DDS1,3; Lodienė Greta, PhD, DDS1; Loda Darius, DDS1; Egle Zasciurinskiene PhD, DDS2; Mindaugas Starkus DDS3
1Lithuanian University of the Health Sciences, Academy of Medicine, Faculty of Odontology, Department of Dental and Oral Pathology
2Lithuanian University of the Health Sciences, Academy of Medicine, Faculty of Odontology, Department of Orthodontics
3UAB Odontologijos praktikos centras

Background: The case report describes the multidisciplinary dental management of complicated crown-root fractures with luxation of permanent maxillary incisors resulting in the best possible outcome
Case presentation: An 18-year-old woman was referred to the endodontist due to complicated crown-root fractures with luxation of the maxillary incisors, which occurred one week prior. Initial treatment was provided by general practitioner. Clinical and radiographic examination revealed complicated crown-root fractures with luxation of the maxillary incisors. Following multidisciplinary specialist consultation, the treatment plan included: 1. Crown restoration after removal of the fractured crown root fragment and gingival plastic surgery. 2. Orthodontic treatment of the maxilla. 3. Endodontic treatment involving the use of calcium hydroxide paste, followed by root canal obturation with bioceramic cement, warm gutta-perch. Follow-up was conducted for 2-year and still ongoing.
Results: After 2-year of follow-up, the clinical and radiographic findings demonstrated that the adopted multidisciplinary management was successful with no signs of periradicular pathosis.
Discussion: Complicated crown-root fractures and luxation are associated with a high risk of complications during healing, including pulpal necrosis and calcification, external inflammatory resorption, replacement resorption, gingival retraction, and marginal bone loss. Complicated crown-root fractures pose difficulties for dentists to establish adequate treatment plans because these fractures require multidisciplinary knowledge and approach for a correct case planning and prognosis. Successful multidisciplinary treatment depends on thorough diagnosis, proper treatment planning, and patient support and monitoring throughout the treatment period.
Conclusions&Clinical relevance : Despite the challenge, the present case report that the management of such complicated cases requires careful planning and multidisciplinary management among dental professionals to ensure the best possible outcome.
All authors declare no conflict of interest.

Management of Endodontic Sequelae Associated With Dentofacial Trauma using 3D Surgery Simulation

Sally,McCarthy[1];Sarjoo,Mistry[1]
[1]Eastman Dental Hospital, UCLH London

Keywords: Immature Apex, Root resorption, Dental Trauma, 3D modelling, MDTE

Aims: Adverse endodontic sequalae may present many years after a dental trauma incident. This case documents the management of persistent exudate associated with a central incisor with an immature apex in a young male athlete who suffered dental trauma 18 years previously and who remained at-risk for repeat dento-facial trauma. It demonstrates the use of 3D modelling to simulate proposed endodontic surgery in a complex case. It highlights the importance of regular dental attendance in the decades following a dental trauma for early detection of developing trauma sequelae.

Case presentation: A 26-year-old male athlete was referred for treatment of a discharging buccal sinus, discolouration and pain associated with a maxillary central incisor. The patient reported that he sustained a fall aged 8 when playing football and that root canal treatment was completed at the time. The tooth was asymptomatic for several years following the trauma. Clinical examination revealed a buccal sinus associated with the maxillary right central incisor. There were no isolated probing defects. The tooth was discoloured and was tender to percussion. Radiographic assessment revealed an immature apex which had root resorption and a periapical lesion. Management included surgical planning and simulation using 3D modelling, through-and-through endodontic surgery and inside-outside bleaching of the anterior tooth, with a 24-month follow-up.

Conclusion: Regular dental attendance should be encouraged to improve detection and prognosis of late-presenting adverse sequelae following traumatic dental injuries. Three-dimensional simulation of proposed endodontic surgery may improve treatment outcomes associated with surgical management of trauma sequalae in complex cases. Athletes are at-risk for multiple dental trauma episodes, which should be considered when treatment planning for this cohort.

Severe periodontal trauma caused by orthodontic elastic bands. A case report with 8-year follow-up.

Daryna,Tolkachova[1];Vitali,Pchelnik[1]
[1]Pediatric Dental Center, Kharkiv, Ukraine

Keywords: Severe periodontal trauma, elastic bands, advanced bone loss

Aim: The Article describes a case of extensive bone loss due to periodontal trauma by orthodontic elastic bands slipping apically into the periodontal ligament space.

Case Presentation: 8-year-old girl was complaint about mobility and pain in teeth 11, 21 for 3 month. The dental history included using 2 rubber bands for closing the diastema.
Clinical examination revealed bleeding, 3 grade mobility of the teeth 11, 21 and pocket depth up to 15 mm. But the teeth were vital on pulp test. CBCT has showed the arch-like bone loss around the apexes of 11,21. After a full thickness flap was performed, the 2 rubber bands were observed and removed. Clinical examinations during 6 month have showed the decrease of probing depth, edema, mobility and bleeding. Post-surgery CCBT has revealed narrowing the arch-like defects. 8-years follow-up shows the teeth stability and positive vitality.

Discussion: Local periodontal trauma and destruction can be associated with a variety of dental materials, such as rubber dam, elastic bands, or impression materials. A foreign body might induce both inflammatory and noninflammatory gingival changes manifested clinically as swelling. The most important points that can aid the clinician in suspecting the real cause of the problem are the existing history of orthodontic or restorative treatment and the rapid progression of signs and symptoms noted when the problem is detected at an early stage.

Conclusion: The improper use of elastic bands leads to severe periodontal trauma and bone destruction, which may even result in tooth loss. Even in the cases, when elastics are used, they are need to be stabilized and their position should be documented for parents.

The authors whose names are listed above certify that they have NO affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

Tooth Fragment Reattachment in Complicated Crown Fracture of Young Permanent Incisors - A Case Series

Hussa,AlBahar[1];Aysha,Alsaif[1]
[1]Kuwait Board in Paediatric Dentistry

Keywords: Trauma, fragment, reattachment, fiberglass, crown fracture, complicated

Aim:
To present tooth fragment reattachment and vital pulp-therapy(VPT) in complicated crown fracture(C-CF) of young permanent incisors of three children.

Case Presentation:
Three boys, aged 8, 12, and 13.5-years sustained CCF of their maxillary incisors. They were immediately managed with VPT, including direct pulp-cap or partial pulpotomy, and reattachment of tooth fragments. One case used fiberglass-splint reinforced composite-core prior to fragment reattachment, while two cases used flowable composite to reattach the fragments. One fragment was reattached dry, while two were rehydrated before reattachment. Survival rates of the fragments varied from 5-days, 4-months, and 3-years. The fragments were de-bonded due to recurrent dental injury, although a mouthguard was in place in two cases. All teeth received composite build-up and survived for 2-years with ongoing monitoring.

Discussion:
For young dental trauma patients, clinicians face the decision to reattach fractured tooth fragments or build a composite restoration. Reattachment of fractured tooth fragments is considered a conservative option that restores morphological, aesthetic, and functional aspects. However, their survival rate is unpredictable and relies on several factors. One case had dry fragment reattachment with self-etch bond, which might have affected the retention of the fragment. While two cases were active sports players with custom-fit mouthguard fabricated and had less survival rate of fragment reattachment (5-days and 4-months), compared to the non-sports player (3-years). To prevent this, clinicians could avoid tight contact of mouthguard around the traumatized tooth by blocking it with a reservoir; however, more research is needed in this area.

Conclusion & Clinical Relevance:
This case-series has shown fragment reattachment and VPT of fractured young permanent incisors allowed conservative restoration with maintained vitality. However, survival rate of fragment reattachment was most likely affected by fragment hydration, bonding protocol, severity of tooth structure loss, and patient's active sports lifestyle.

No conflict of interest to declare.

Complex issues in the management of severe intrusions of immature permanent teeth.

Robyn,Crowley[1];Anne C,O'Connell[1]
[1]Dublin Dental University Hospital, Trinity College Dublin

Aim
Intrusion is displacement of the tooth in an apical direction into the alveolar bone. Intrusion of permanent teeth is rare, accounting for 1.9% traumas. Immediate and long term management of severe intrusion can be complicated by any number of factors including timing of intervention and consequences of the injury, including pulp necrosis and replacement root resorption. This report reviews the management options for severe intrusions illustrated using a case.
Case presentation
A healthy 8-year-old boy was referred for care three weeks after the traumatic dental injury. He presented with severely intruded tooth 11 with a concomitant enamel-dentine fracture and enamel-dentine fracture tooth 21 without luxation. Tooth 11 had an immature apex and was given two further weeks for spontaneous eruption. Orthodontic extrusion was commenced as no eruption occurred. One week later (week 6) the patient presented with pain and an intraoral swelling and endodontic treatment using calcium hydroxide was commenced once access was possible. Orthodontic forces were applied until the tooth was adequately extruded and maintained for one month to reduce relapse.
Discussion
The risk of complications (pulp necrosis, marginal bone loss and inflammatory and replacement root resorption) is increased when the intrusion is greater than 7mm and where there is a concomitant crown fracture as in this case, which was further complicated by the child's cooperative ability. Treatment options depend on the level of intrusion and apex maturity. Spontaneous eruption may not occur in severe intrusions necessitating surgical or orthodontic extrusion to permit access to the pulp. Orthodontic extrusion is less invasive and therefore is easier to tolerate for some patients.
Conclusion/ Clinical Relevance
This case demonstrates the complex decisions required in the management of a severely intruded permanent incisor in a young patient.

The authors declare no conflicts of interest.

Replantation of Maxillary Primary Incisors with Long-term Follow-up - A Case Series

Muthu,MS[1];Vidhyalakshmi,Tilak[2];Priya,Jayakumar[3];Aksshya,Raghu[4];Naveen,Vittal Raj[4]
[1]Prof & Head, Centre for Early Childhood Caries Research, Department of Pediatric and Preventive Dentistry, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-600116, Senior Consultant, Pedo Planet-Children Dental Centers
[2]Senior Consultant, Branch Head, Pedo Planet-Children Dental Centers
[3]Department of Pediatric and Preventive Dentistry, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-600116, Senior Lecturer
[4]Department of Pediatric and Preventive Dentistry, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-600116, Former Post Graduate Student

Keywords: Replantation, Primary Teeth, Avulsion

Avulsion of primary teeth account for 5.8-19.4% of all the physical injuries. The literature on replantation of avulsed primary teeth is sparse when compared with abundant literature on replantation of avulsed permanent teeth. The arguments against replantation of primary teeth in the literature are attributed to (I) potential risk of injury to permanent successors (2) non cooperative child's behaviour (iii) absence of evidence based protocols for replantation (iv) absence of evidence regarding benefits of replantation. Seven cases of replantation of maxillary primary incisors are presented in this case series. Three cases were followed up until spontaneous exfoliation of the replanted teeth without any complications. Two cases are being followed up. One case failed due to repeated trauma leading to extraction of the replanted tooth. One tooth got ankylosed. Preliminary protocols to replant avulsed primary anterior teeth are presented here.

Management of inflammatory root resorption in an intruded tooth: A case with 10 year follow up

Vijay,Kumar[1]
[1]All India Institue of Medical Sciences, New Delhi, India

Keywords: Intrusive luxation, root resorption, calcium hydroxide

Aim: To present a case with successful management of Inflammatory root resorption subsequent to intrusive luxation injury Case presentation: An eight year old girl presented to the endodontic speciality clinic for management of tramatic dental Injury. The patient reported with 24 hours of trauma. Both maxillary central incisors suffered intrusive luxation with uncomplicated crown fracture. Considering the age of patient, it was decided to wait for spontaneous eruption of teeth and only Esthetic rehabilitation was performed at initial visit. At two weeks follow up, the inflammatory root resorption was evident in both central incisors. It was planned to initiate endodontic treatment at this stage. Root canals were derided and intracanal calcium hydroxide dressing was places. The medicine dressing was changed every two weeks for a period of two months. Teeth were obturated with Mineral trioxide aggregate apical plug and thermoplastic guttapetcha back fill only after radiographic evidence of arrest of inflammatory resorption process. The patient was followed up at regular intervals upto 10 years and showed complete reestablishment of lamina dura around the resorption defect. Discussion: Damage to precemetum and dentine initiate an inflammatory response in the periodontal ligament cells. The presence of infected and necrotic pulp provide stimulus to sustain the inflammatory process and results in root resorption. The removal of necrotic pulp and disinfection of root canal space are key for successful management of Inflammatory root resorption. Conclusion and clinical relevance: The inflammatory resorption can be arrested by intracanal calcium hydroxide medicament dressing. The traumatized teeth must be regularly monitored to identify and treat any unwanted sequelae of traumatic dental Injury. Author deny any conflict of interest.

Poster Scientific Research

The Incidence of Devitalization of Vital Teeth Associated with Pathologies of the Jaws Following Surgical Intervention – A Mixed-case Study

Alharbi,Mohammed[1];Abdulwahed,Alghamdi[1];
Sereen,Kattan[1];Obadah,Austah[1];Bader,Othman[1];
Sawaher,Haddad[1];Alya,Aljumaiah[1];
Mohammed,Barayan[1];Attar,Esra[1]
[1]King Abdulaziz Univeristy

Keywords: Non-odontogenic cyst, Odontogenic cyst, Postoperative complications, Pulp necrosis, Surgical intervention

Aim: The purpose of this mixed-case study is to explore the incidence of pulp necrosis of vital teeth after surgical treatment of adjacent lesions of the jaws.
Materials and methods: The records of 341 biopsies submitted to the institute's histopathology laboratory were reviewed to include the cases that met the inclusion criteria. About 84 biopsies collected from patients during surgical enucleation of lesions in proximity to healthy vital teeth were included of which 22 patients were recalled. Adjacent teeth were examined clinically and radiographically to assess their pulpal and periapical status after at least 8 months of follow-up.
Results: There were 7 different pathological lesions diagnosed histologically. The follow-up period ranged between 8 and 72 months; 12 cases (54.6%) have developed pulpal necrosis for at least one tooth after surgical enucleation of the lesion. The other 10 cases (45.4%) showed normal responses to sensibility testing for all the teeth adjacent to the lesion. Ten out of the 12 cases (83%) that underwent pulpal necrosis were associated with odontogenic cysts, whereas the remaining 2 were associated with periapical granuloma and fibrous dysplasia.
Conclusion: pulp necrosis is high in vital teeth associated with lesions without pulpal involvement. These teeth may benefit from root canal treatment prior to surgical enucleation of the lesion, which may prevent impaired healing or recurrence of infection.
Clinical significance: Careful treatment planning and thorough discussion should take place between the surgeons, endodontists, and patients prior to executing the treatment. The patient should be aware that there is a possibility that they may need root canal treatment as a preventative measure to enhance the chances of healing following the surgical procedures and in case the patients opted not to perform root canal treatment beforehand, close follow-up in the future should take place to monitor the vitality of the teeth in the follow-up visits.
Keywords: Non-odontogenic cyst, Odontogenic cyst, Postoperative complications, Prognosis, Pulp necrosis, Root canal treatment, Surgical intervention.

Effect of mineral trioxide aggregate mixed with Thai propolis extract on matrix metalloproteinase-2 expression in inflamed human dental pulp cells

Pattama,Chailertvanitkul[1];
Nutnicha,Tiyapitsanupaisan[1];Nutthapong,Kantrong[2];
Subin,Puasiri[1]
[1]Faculty of Dentistry, Khon Kaen University
[2]School of Dentistry, Mae Fah Luang University

Keywords:MMP-2, MTA, Propolis

Chailertvanitkul P*, Tiyapitsanupaisan N*, Kantrong N**, Puasiri S*.
*Faculty of Dentistry, Khon Kaen University, Khon Kaen, THAILAND
**School of Dentistry, Mae Fah Luang University, Chiang Rai, THAILAND

Aims: To investigate the effect of mineral trioxide aggregate (MTA) mixed with Thai propolis extract (TPE) on matrix metalloproteinase-2 (MMP-2) expression in inflamed human dental pulp cells (HDPCs). Materials and Methods: IL-1β - stimulated HDPCs (n=3) were incubated with the eluents of MTA mixed with distilled water (DW), MTA mixed with 0.75 mg/ml TPE, 0.75 mg/ml TPE, or Dycal for 24 and 72 h. Chlorhexidine (CHX)-treated and untreated IL-1β – stimulated HPDCs served as positive and negative controls, respectively. Expression of MMP-2 mRNA and its gelatinolytic activity were quantified using quantitative PCR and gelatin zymography. Kruskal-Wallis test with Dunn's Bonferroni multiple comparison was performed to compare the expression levels of MMP-2 with a significant level of 0.05. Results: MMP-2 was significantly induced in IL-1β - stimulated HDPCs by MTA mixed with DW. MTA mixed with TPE tended to reduce MMP-2 mRNA and its activity, compared to that of MTA mixed with DW. Overall MMP-2 mRNA levels were dampened at 72 h, compared to 24 h. MMP-2 mRNA in CHX-treated group remained unchanged as opposed to inhibition of response by Dycal at both time points. Analysis of MMP-2 activity showed that TPE, Dycal and CHX significantly inhibited MMP-2 activity at both 24 and 72 h. Discussion: The activity of MMP-2 at 24 h was not affected by MTA mixed with DW but was significantly suppressed at 72 h, indicating an early promotion of collagen maturation involved in dentin regeneration. MTA mixed with TPE decreased MMP-2 activity at both time points, compared to MTA mixed with DW. Dycal significantly reduced MMP-2 activity compared to MTA groups, suggesting a distinct modulation of collagen synthesis between two materials. Conclusions: MTA upregulated MMP-2 in inflamed HDPCs regardless of vehicle used. However, MTA mixed with TPE potentially downregulated MMP-2 expression and its function. Conflict of interest: None.

The outcome of delayed replantation of avulsed permanent teeth

Xiaoxian,Chen[1];Bichen,Lin[1];Zhong,Jie[1];Ding,Meili[1];
Zhang,Hongmei[1];Wen,Quan[1];Shi,Bingqing[1];
Ren,Yulan[1]
[1]Peking University School and Hospital of Stomatology, First Clinical Division, Department of Pediatric Dentistry

Aim: To observe the outcome of delayed replantation of avulsed permanent teeth.
Methodology: A retrospective observational study was conducted to collect cases diagnosed with avulsion of permanent incisors and delayed replantation (more than 60-minute extra-alveolar time) in First Clinical Division, Peking University School and Hospital of Stomatology from May 1, 2019 to May 31, 2023, with an observation period of more than 6 months. Case records and periapical radiographs were evaluated to analyze the outcomes.
Result: A total of 38 permanent teeth from 33 patients (18 male and 15 female) were included. The age range was 6-16 years, with an average age of 10 years. The observation period was from 6 months to 39 months, with an average of 13.2 months. Twenty cases of avulsed permanent teeth were with a close apex and 18 cases of an open apex. There were only two cases with live pulp (one stored in saline, the other dry for 2 hours) and all others showed symptoms of pulp necrosis and underwent pulp extirpation (apexification 17, pulp revascularization 3, root canal treatment 16). As for the healing of periodontal ligament, external root resorption (ERR) was a common complication after replantation: superficial ERR accounted for 16% cases, replacement ERR (RERR) for 47% and inflammatory ERR (IERR) happened in 21%. The survival rate was 84% and tooth extraction happened in 16% cases with progressive IERR because of delaying pulp extirpation. The coronation surgery was not accepted by any parent even if the doctors suggested it.
Conclusion: Around half of periodontal ligament healing was ankylosis-related RERR in delayed replantation of avulsed permanent incisors. Spontaneous revascularization occurred in 11% of delayed replanted avulsed permanent teeth with open apex. Timely pulpectomy (within 2 weeks) after the delayed replantation could prevent the occurrence of IERR.

The novel use of the patient's own natural tooth for prosthetic replacement after tooth loss due to traumatic dental injury.

Samah,Omar[1]
[1]Loma Linda University School of Dentistry

Aim:
To present step by step procedure for the novel use of natural teeth as Fixed partial denture pontics. The teeth were used for long-term replacement of failing traumatized maxillary permanent teeth in young patients.

Case description:
An impression with bands on permanent molars was made and sent to the lab for fabrication of the Fixed pediatric partial dentures (Grooper appliance) metal framework. The appliance was delivered approximately 3-4 weeks after the surgery or the extraction. Meanwhile, the crown was bonded to the adjacent teeth for esthetics and to prevent space loss. The decoronated/cut crown was contoured at the cervical margin to match the contra-lateral incisor for the best esthetics. The pulp chamber was accessed, coronal pulp tissue was removed, and the pulp space was filled with resin composite. The crown was attached to the framework chair-side using flowable composite. The appliance provided satisfactory esthetics for the patient and parents up to 9 years in some cases.

Discussion:
Tooth loss after traumatic dental injuries is unavoidable and can be devastating from esthetic and functional aspects. Management options in young growing patients are limited and challenging when implant placement and fixed partial dentures are not feasible. If orthodontic space closure is not the best option for the growing child, removable partial dentures become the easiest way to replace the missing teeth. When teeth are lost after poor outcome and late complications of dental trauma, like replacement resorption or extensive marginal bone loss, we have the advantage of using the natural tooth. The crown of these failing teeth can be bonded to a fixed appliance to achieve better esthetics.

Conclusion:
Using the patient's own tooth provides the best esthetic results while attached to a fixed appliance rather than using a removal partial denture in growing patients.

I declare no conflicts of interests.

Evaluation of dental students' knowledge and confidence in paediatric dental trauma management

Sobia,Zafar[2];Cheong,Luan Lin Jovita[2];Vonn,Ler[2];Anastasia Min,Teh[2];Paul,Abbott[1]
[1]The University of Western Australia
[2]The University of Queensland

Keywords: Trauma, Dental, Paediatric, Knowledge, Confidence

Aim: To assess the knowledge and confidence levels of fourth year dental students from The University of Queensland (UQ) regarding the management of dental trauma.

Methods: A 44-item questionnaire was handed out to fourth year dental students enrolled in the 2022 and 2023 BDSc (Hons) programme at UQ and who had attended the Traumatic Dental Injury (TDI) module. Areas of knowledge assessed included knowledge of TDI management in the primary dentition, knowledge of managing fractures and subluxation in the permanent dentition and knowledge on managing avulsion of permanent teeth. Attitudes were assessed as a self-reported confidence in handling dental trauma cases. Both the knowledge and self-reported confidence levels of all participants were tabulated as scores and categorised into three groups: Below average (0-49.9%), Average (50-74.9%) and Above average (75-100%). Jamovi (Version 2.3.18) was used for data analysis and Prism Graphpad (Version 10.0.2) was used to construct graphs for analysis.

Results: There were 151 fourth year UQ dental students from both cohorts in 2022 and 2023. Of these, 118 students completed the questionnaire(response rate 78.1%). UQ fourth year dental students had an average level of knowledge in handling TDI (59.6% correct answers). Most participants had a good understanding of themanagement of TDI in the primary dentition (76.5% correct answers), while participants had a poor understanding of managing avulsion of permanent teeth (42.6% correct answers). Overall, the majority of students (70.3%) had an average knowledge in managing TDI. A high percentage of participants (83.9%) reported a low confidence in managing these cases.

Conclusion: Participants demonstrated an average level of knowledge in handling TDI cases with the majority expressing low confidence in managing such cases clinically. Most participants perceived the need for more clinical exposure to TDI cases and preclinical simulations to build confidence in managing these cases

Clinical effect of Er: YAG laser assisted direct pulp capping and fragment reattachment in the treatment of permanent anterior teeth with complicated crown fracture

Qiang,Li[1];Liu,Jia[1];Yang,Ping[1];Zhang,Min[1];Chen,Yongjin[1]
[1]School of Stomatology, the Air Force Military Medical University

Keywords: Er: YAG laser; direct pulp capping; crown fragment reattachment; complicated crown fracture; permanent anterior teeth

Li Qiang, Liu Jia, Yang Ping, Zhang Min, Chen Yong-jin
State Key Laboratory of Oral & Maxillofacial Reconstruction and Regeneration, National Clinical Research Center for Oral Diseases, School of Stomatology of the Air Force Military Medical University, China

Aim: To observe the efficacy of Er: YAG laser-assisted direct pulp capping and crown fragment reattachment in the treatment of complicated crown fracture of anterior permanent teeth. Materials and Methods: Thirty two traumatized anterior permanent teeth with complicated crown fracture from twenty five patients were selected in the present study, They were treated by Er: YAG laser-assisted direct pulp capping and crown fragment reattachment, and reviewed at 1, 3, 6 and 12 months after the operation. The clinical efficacy was observed and evaluated based on the criteria of clinical examination, imaging examination and satisfaction scores. Result: During the 6 months follow-up period, 90% of the treated teeth showed normal pulp sensitivity, and no defect or loosening of the reattached fragment was observed. The success rates of marginal fitness and imagological examination were 96.88% and 93.75%, respectively. After 12 months, only 10% of the teeth showed sensitive. The success rates of the integrity, stability and marginal fitness of the reattached fragments were 90%. Additionally, abnormal apical development or periapical lesions were observed in only 10% of the treated teeth. Moreover, the patients showed well satisfaction with the aesthetics, comfort, mastication and retention of the treated teeth with no significances among the follow-up time points (P>0.05). Discussion and conclusions: Er: YAG laser is effective in assisting direct pulp capping and crown fragment reattachment in the treatment of permanent anterior teeth with complicated crown fracture. The method used in this study could be used as a clinical minimally invasive treatment option for the complicated crown fracture.

No conflict of interest is declared.

Vital Pulp Therapy in Fractured Tooth with Irreversible Pulpitis: A Case Report

Le-Yin,Chen[1];I-Ching,Liao[2];Yea-Huey,Chen[2];
Kuan-Liang,Chen[2];Chih-Yin,Kuo[1];Chao-An,Chen[1]
[1]Chi Mei Medical Center, Liouying
[2]Chi Mei Medical Center

Aim of the cases included in the poster: To show the potential of pulp healing in mature permanent teeth with irreversible pulpitis.

Case Presentation: A 13-year-old female suffered from dental fracture in upper anterior region due to falling three days ago. The coronal segments of the fracture teeth were collected. Clinical findings showed teeth 11,21 crown fracture with pulp exposure and mobility grade I, no palpation pain, or pain in percussion test. The diagnosis for teeth 11, 21 was irreversible pulpitis and the periapical diagnosis was normal apical tissues. Necrotic pulp tissue in tooth 11 was identified, leading to the performance of a pulpectomy. Tooth 21 was done with pulpotomy and pulp capping using Biodentine. Fragments of teeth 11, 21 were reattached back. After 13 months of follow-up, teeth 11, 21 remained asymptomatic and tooth 21 was vital.

Discussion: The pulp diagnosed with irreversible pulpitis means the vital inflamed pulp is incapable of healing by definition from American Association of Endodontists. However, many studies of vital pulp therapy of mature permanent teeth with irreversible pulpitis shows a high successful rate. In restoring the fractured crowns, reattachment of the original crown fragment presents many advantages including better surface morphology and shorter chair time[1].

Conclusion& Clinical Relevance: Vital pulp therapy of mature permanent teeth with irreversible pulpitis can be an alternate option to root canal therapy.

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Knowledge about dental trauma management among secondary school students in Poland.

Karolina,Spodzieja[1];Dorota,Olczak - Kowalczyk[1]
[1]Medical University of Warsaw

Authors with their affiliation

Karolina Spodzieja, DDM, Medical University of Warsaw, Department of Paediatric Dentistry.
Professor Dorota Olczak – Kowalczyk, DMD, PhD, Medical University of Warsaw, Department of Paediatric Dentistry.

Aim
The aim of this study was to evaluate the knowledge in management of dental trauma injuries of secondary school students in Poland.
Materials and Methods
A self – administered questionnaire was completed by randomly selected 258 secondary school students aged 14 – 19. The questionnaire comprised of items on sociodemographics, history of dental trauma and knowledge on management in different types of dental traumatic injuries.

Results
The study included 258 questionnaires subjected to statistical analysis using a $\chi 2$ independence test and Spearman's rank correlation ($p < .05$). Results show that 100% of surveyed students who attended the first aid course have never been educated on management in dental trauma. 50% stated that a painful tooth after an injury but without mobility, doesn't require immediate dental consultation. Only 46% of students thought that a fragment of broken tooth may be useful in treatment. As many as 67% of students were unaware that avulsed tooth can be put back in its place. Male students showed better knowledge than female and the difference was statistically significant ($p<0.0001$). A correlation was found between students who had suffered dental trauma in the past and knowledge in management of traumatic injuries.

Discussion
Results of this study demonstrate that more attention should be given to dental first aid protocols. Proper management of TDI such as dental consultation, storage and transportation of the avulsed teeth may affect the success of the treatment.

Conclusions
This study highlights deficiencies in knowledge on the management in dental trauma. It appears necessary to introduce guidelines for students to raise their level of awareness concerning this topic.

No potential conflict of interest was reported by the authors.

The observation of apoptotic and oxidative stress level in dental pulp after severe tooth trauma

Zhaochen,Shan[1]
[1]School of Stomatology, Capital Medical University

Keywords: Dental trauma, pulp, apoptotic level, oxidative stress

The observation of apoptotic and oxidative stress level in dental pulp after severe tooth trauma

Shan Zhaochen
Affiliations: Outpatient Department of Oral and Maxillofacial Surgery, School of Stomatology, Capital Medical University, Beijing 100050, China

Aim:
To detect the pathological changes of dental pulp after complicated crown-root fractures with pulp exposure in mature teeth with complete root formation.
Materials and Methods:
Based on strict inclusion and exclusion criteria, we collected premanillary teeth with complicated crown-root fractures from School of Stomatology, Capital Medical University. All individuals must first sign with informed consent. The exposed dental pulp was collected and kept in -80°C refrigerator. IHC staining of TUNEL, p-H2AX and WB detection of Caspase-3, BAX, Bcl2, p-H2AX were done. All data were analyzed with Prism 9 software using One-way ANOVA with Tukey's multiple-comparison test.
Discussion:
We collected 18 dental pulps of premanillary mature teeth (aged 25±5.4) with complicated crown-root fractures, which the dental pulp was needed to be removed, and 20 health premolar teeth extracted due to orthodontics. All the dental pulps were 4-8 hours after dental trauma. Although, the histological observation of dental in health group and trauma group, showed no significantly difference. Comparing with healthy dental pulp, the apoptotic level, as TUNEL positive cells and Caspase 3+ cells were much higher in trauma group. The expression of oxidative stress level, p-H2AX was significantly upregulated in trauma group.
Conclusions:
The pulp showed significantly upregulated apoptotic level and oxidative stress level. Based on our results, we indicated that although there is no visual histological observation in dental pulp after dental trauma, the pathological molecular changes were initiated. Thus, the management of dental pulp at early stage after severe trauma need to be carefully handling.
Key words:
Dental trauma, pulp, apoptotic level, oxidative stress

The author declares no conflict of interest.

Management of Perforating External Inflammatory Root Resorption following subluxation with crown fractured on matured teeth: A multidisciplinary approach.

Noorharliana,Zohdi[2];Norsaima,Ismail[1,2];
Norashikin,Abu Bakar[2];Annapurny,Venkiteswaran[2]
[1]Ministry of Health Malaysia
[2]University of Technology MARA, MALAYSIA

Keywords: Perforating inflammatory root resorption, intrusion, subluxation, MTA

Management of Perforating External Inflammatory Root Resorption following subluxation with crown fractured on matured teeth: A multidisciplinary approach.

External root resorption is one of the prevalent sequelae after a traumatic incident to the teeth. When a tooth is luxated, an inflammatory response develops immediately within the periodontal ligament and bone, and the presence of bacteria in an infected root canal system may exaggerate existing inflammation and induce inflammatory resorption within the root canal and adjacent bone. This case highlights the non-surgical endodontic treatment following the management of subluxated and intruded anterior teeth in young adolescents.

A 15-year-old boy presented with avulsed 21, intruded 11 with uncomplicated crown fracture, concussion of 12, and subluxated and uncomplicated crown fracture of 22. Surgical repositioning of 11, splinting of tooth 12 to 22 followed by fiber-reinforced resin composite bridge to replace missing 11 temporarily. Teeth 12 and 11 were non-responsive to the pulp sensibility test four months following trauma and diagnosed with pulpal necroses with asymptomatic apical periodontitis. Noticeable external root resorption at the distal surface of tooth 22 around the cervical area extending to the middle external surface of the root and a 5 mm diameter of periapical lesion was apparent during the review 12 months post-trauma. Communicating internal-external root resorption at the distal surface of the middle third of the root, 6 mm from the apex, confirmed by a localized view of cone-beam computed tomography. Perforating root resorption at the junction of the apical and middle third of the root is visible under endodontic microscope magnification. Intracanal medicament calcium hydroxide was placed for a month until the tooth was symptomless. The canal was then obturated with MTA sealing of the resorption site and backfilled with gutta-percha to the coronal half, followed composite restoration. Avulsed 21 was replaced with resin bonded bridge after completion of non surgical root canal treatment on the 12, 11 and 22. All anterior teeth remain functional and asymptomatic at four weeks, 1, 2, 6 months, and three years follow-up.

The authors have no conflicts of interest to declare.

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https://doi.org/10.1111/adj.12400

Cone-beam computed tomography based descriptive classification and treatment centered protocol for transverse root fracture

Aakriti,Saini[1];Sidhartha,Sharma[1];Ajay,Logani[1]
[1]All India Institute of Medical Sciences, New Delhi

Keywords:classification, cone-beam computed tomography, dental trauma, root fracture

Authors: Aakriti Saini, Sidhartha Sharma, Ajay Logani
Aim: To formulate a cone beam computed tomography (CBCT) based descriptive classification and propose a treatment centered protocol for transverse root fracture (TRF).
Methodology: The proposed alphanumeric classification included the traumatized tooth number, described the number of TRF, the facial and lingual location of each fracture line on the anatomic root (cervical, middle or apical), and its position relative to the crest of the alveolar bone (supra crestal, crestal or sub crestal). Further, diastasis (present or absent), displacement of the coronal fragment (facial, lingual or incisal) and status of the alveolar bone at the site of TRF (healthy, fractured or resorbed) were also documented. Additionally, a treatment centered protocol based on CBCT and clinical features were developed.
Discussion: CBCT should be considered when conventional radiographs provide 'insufficient' information for diagnosis and treatment planning of TRF (1). Considering that CBCT can divulge additional information, it would be beneficial to have a clinically pertinent three-dimensional classification. This classification reports on the association of the fractured segment to the alveolar crest, the diastasis and displacement of the coronal fragment which are known factors influencing outcome and treatment (2). This will allow assessing the effect of these parameters on the outcome of treatment objectively.
Conclusion & Clinical relevance: At present there is no classification to accurately describe TRF. This CBCT classification overcomes the shortcoming of 2D based classification systems. It is a useful tool to descriptively record TRF and provides a treatment-centered protocol. It would provide a standard format for reporting, aid in referral communication, and can be applied for future outcome studies on TRF.
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A suggested cone-beam computed tomography based protocol for reporting transverse root fracture

Ajay,Logani[1];Aakriti,Saini[1];Sidhartha,Sharma[1]
[1]All India Institute of Medical Sciences, New Delhi

Keywords:cone-beam computed tomography, dental trauma, root fracture

Authors: Ajay Logani, Aakriti Saini, Sidhartha Sharma
Aim: To formulate a CBCT based reporting protocol for transverse root fracture (TRF).
Methodology: CBCT is recommended when conventional radiographs provide 'insufficient' information for diagnosis and treatment planning. To diagnose TRF, a limited FOV scan with a voxel size of ≤0.125mm is recommended. To interpret, reconstructed CBCT slices (sagittal, axial, and coronal) should be assessed. The traumatized tooth should be visualized in an axial corrected projection. The sagittal slice should be preferred. TRF would appear as a hypo-attenuated line. The reporting format entails description of the crown, root, periapex, periodontal ligament and alveolar bone. In sagittal slice any concomitant tooth injury, type and degree of displacement of coronal fragment should be described. The root development stage, periapical status, facial and lingual location of TRF relative to anatomic third of root and crest of alveolar bone, extent and number of TRF, diastasis, pulp canal obliteration and root resorption (if any) should be reported. In the coronal slice, mesial, distal or incisal displacement of the coronal fragment and the location of TRF relative to the mesial or distal crest of alveolar bone should be noted. Dentoalveolar fracture (if any) and the status of alveolar bone adjacent to the site of TRF could be reported in all slices. However, the axial slice provides the optimal view for reporting the latter.
Discussion: This paper describes the imaging chain involved in the CBCT workflow from indication to reporting a TRF on a CBCT scan. It provides essential information on standardization of prescan parameters, TRF features and interpretation on CBCT scans. Finally, it describes a framework for a systematic, comprehensive and tailored CBCT radiographic report
Conclusion & Clinical relevance: This format intends to provide a standard method for descriptively reporting and documenting TRF on CBCT. It would facilitate the diagnostic process and appropriate management of TRF.

In Vitro Root Canal Therapy for Avulsed Teeth: A 6-Month Follow-up

Mary Claire,Garcia[1];Satish Alapati[2];Evelina,Kratunova[1]
[1]University of Illinois Chicago, Department of Pediatric Dentistry
[2]University of Illinois Chicago, Department of Pediatric Dentistry, Department of Endodontics

Keywords: Tooth Avulsion, Root Canal therapy

Aim: Dental pulp revascularization emerges as a biologically based alternative treatment for immature necrotic teeth, presenting a paradigm shift from traditional methods that create artificial apical barriers. This regenerative approach utilizes the intrinsic healing potential of stem cells from residual pulp and periodontal areas, aiming to restore vitality and promote natural growth in traumatized immature permanent teeth. This case presentation reports on the long-term outcomes observed in two pediatric cases over an eight-year period, highlighting the role of revascularization in dental trauma outcomes.

Case Presentation:: Case reports of a 7-year-old female with a severe palatal luxation of the upper left central incisor and a 9-year-old male with a completely intruded upper left central incisor are described. Both cases underwent pulp revascularization procedures and were monitored for eight years.

Discussion : The first case showed a successfully revascularized tooth, fully functional in a 15-year-old patient, indicating recovery and continued root development post-treatment. The second case resulted in a functional tooth eight years post-revascularization, without the occurrence of ankylosis, a common complication following traumatic intrusions. This outcome suggests that the biological attachment facilitated by revascularization may prevent ankylosis, aiding in the long-term preservation of the tooth.

Conclusion and Clinical Relevance: These cases demonstrate the potential of pulp revascularization in managing traumatically injured immature permanent teeth, demonstrating successful outcomes in tooth functionality and the prevention of complications like ankylosis. The findings support further consideration and investigation into pulp revascularization techniques within pediatric dentistry for the effective treatment of immature teeth following trauma.

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Prognosis of Fragment Reattachment in Anterior Crown Fractures: A Retrospective Study

Lisu,Sung[1];Sunil,Kim[1];Euiseong,Kim[1];Yooseok,Shin[1];Deog-gyu,Seo[2];Dohyun,Kim[1];Byoung-Duck,Roh[1]
[1]Yonsei University College of Dentistry, Seoul, Korea
[2]Seoul National University School of Dentistry, Seoul, Korea

Keywords: Fragment re-attachment

I. Objective
In case of crown fractures after dental trauma, one treatment option is fragment reattachment. However, there is a scarcity of clinical studies on prognosis of reattached fragment. Therefore, the aim of this retrospective study was to evaluate the survival of the fragment reattachment and determine prognostic factors affecting its survival.

II. Materials & Methods
Records from patients treated at Department of Conservative Dentistry, Yonsei University Dental Hospital between 2008 and 2023 were analyzed. Survival analysis was performed to estimate the prognosis of fragment reattachment over time. Estimated survival rates were calculated by using the Kaplan-Meier method. All potential prognostic factors were subjected to multivariate Cox proportional hazard regression analysis.

III. Results
Sixty-eight patients with 75 teeth were included (mean observation time: 2.35 years, 0-14.7 years). The estimated survival rate was 83.7% (N=67/75) after 2.35 years. Results of the multivariate Cox regression analyses revealed the age (hazard ratio, 1.049; p=0.002) and pulp exposure (hazard ratio, 5.945; p=0.025) as the significant factors affecting the treatment outcome.

IV. Conclusion
Within the limitations of this study, the findings suggest that reattaching fragments in anterior crown fractures is likely to yield positive outcomes. However, due to the increased risk of failure in older individuals and when complicated crown fractures occur, additional measures are required to improve fracture resistance in such cases.

V. Conflict of interest statement
The authors have no conflicts of interest related to the study.

Traumatic dental injury presentations at a tertiary hospital in metropolitan Melbourne.

Giselle,DMello[1];Luke,Moloney[1];Mihiri,Silva[1,2];
Lochana,Ramalingam[1,2]
[1]RCH Melbourne
[2]University of Melbourne

Aim:
To determine the prevalence, aetiology, and management of traumatic dental injuries (TDIs) in a tertiary paediatric hospital

Materials and methods:
This project received QA approval from The Royal Children's Hospital (RCH) HREC (QA/98170/RCHM-2023). The hospital electronic medical record was used to identify children who presented with TDIs to the RCH in 2022. Data relating to hospital presentation dates, medical diagnoses, aetiology of trauma, dental trauma diagnoses and management provided were obtained.

Results:
There were 359 children assessed and managed for TDIs at RCH in 2022. The average age at presentation was 5.6 years (7 months - 18.0 years) and 55.9% (n=201) identified as female. Dental injuries affecting the primary and permanent dentitions included complicated and crown-root fractures, luxation injuries including intrusion, extrusion, and lateral luxation, and tooth avulsion. On average, 6 children were assessed at RCH with TDIs every week in 2022. Children attended RCH because they were unable to access care in the community in a timely or appropriate manner. These primarily involved younger children, those with additional medical or behavioural challenges, or those with multiple and complex injuries. The most prevalent teeth injured are maxillary central incisors in the primary dentition secondary to falls and the emergency management of these injuries generally involved extraction under general anaesthesia.

Discussion
As a tertiary hospital, children who are assessed have TDIs involving several teeth with combination injuries. In that respect emergency management aims to restore tissues into optimal positions to enable function. Emergency management of TDIs in the permanent dentition are guided by the principles outlined in the 2020 IADT Trauma Guidelines.

Conclusion:
Children who present to RCH with TDIs encapsulate younger children with multiple injuries requiring emergency management to facilitate function that they are unable to access in the community in a timely manner.

I have no conflict of interest to declare

Associative factors of Traffic Dental Injuries using National datasets in Taiwan

Yu-Hsiang,Lin[1,2]
[1]Taipei Medical University
[2]Graduate Institute of Injury Prevention and Control

Lin YH13, Lee SY12, Carlos Lam45, Wu CC5, Chen PL1*
1. Graduate Institute of Injury Prevention and Control, College of Public Health, Taipei Medical University, Taipei 110, Taiwan
2. School of Dentistry, College of Oral Medicine, Taipei Medical University, Taipei 110, Taiwan
3. Department of Dentistry, Wan-Fang Medical Center, Taipei Medical University, Taipei 110, Taiwan
4. Department of Emergency, School of Medicine, College of Medicine, Taipei Medical University, Taipei 11031, Taiwan
5. Emergency Department, Wan Fang Hospital, Taipei Medical University, Taipei 11696, Taiwan

Background: Dental injuries, particularly Traumatic Dental Injury (TDI), have diverse impacts on individuals in physical, aesthetic, functional, and emotional aspects. This study, utilizing the National Health Insurance (NHI) Database, addresses sample size limitations and aims to identify TDI features associated with traffic accidents through hierarchical regression analysis.
Methods: This population-based case control study used data from the
NHI Database and the Police-Reported Traffic Accident Registry (PTAR) in Taiwan. A total of 3677 victims of Motor Vehicle Crashes (MVCs) experienced TDI. Each victim was age- and gender-matched with 4 controls who were involved in traffic accident. Hierarchical Regression Analysis estimated the adjusted Odds Ratios (aOR) for TDI associated with MVCs, along with their corresponding 95% confidence intervals (CI).
Results: Compared to the group without hospital visits , a higher proportion of TDI occurred in two wheel riders and pedestrians. This positive association persisted after adjusting for covariates. The crude odds ratio for two wheel riders and pedestrians was 39.46 (95% CI, 30.23-51.50) and 67.54 (95% CI, 47.45-96.15), respectively. After adjusting for covariates such as risky behaviour, environment, and transportation mode, the odds ratio for two wheel riders remained at 35.28 (95% CI, 26.94-46.21). Whereas for pedestrians, although decreased to 41.06 (95% CI, 21.68-77.78), it still remained extremely high.
Conclusions: Full-face helmets should be promoted for motorcycle and bicycle riders to avoid dental injury. Pedestrians are the most vulnerable group to accidents, and we should focus on improving poorly designed roads, ensuring adequate lighting in traffic environments, strengthen enforcement against violations and drunk driving, and develop and promote relevant traffic safety policies to ensure pedestrian safety.

Conflict of interest
None declared.

Managing Tooth Avulsion in an Adolescent: Importance of Interdisciplinary Planning and Careful Monitoring

Aysha,Alsaif[1,2];Maryam,Madouh[1,2]
[1]Kuwait Board in Paediatric Dentistry
[2]Kuwait Institute for Medical Specializations

AIM: To highlight the importance of interdisciplinary-planning and careful monitoring in managing a case of tooth avulsion in an adolescent.

CASE PRESENTATION: A healthy 14-year-old boy sustained traumatic avulsion of tooth 21, subluxation of 22, and enamel crown fracture of 11. Following the incident, 21 was subjected to dry extra-oral conditions for 20-minutes before immersion in milk for 40-minutes prior to presentation. Approximately an hour later, 21 underwent extra-oral initiation of endodontic treatment, replantation, and stabilization with a flexible orthodontic-wire-composite splint for 2-weeks. However, after 20-months, 21 developed ankylosis-related root resorption (RRR) and was 2mm infra-positioned compared to adjacent tooth. To prevent further complications, it was decoronated, and an immediate removable partial denture was fitted. Following three years of monitoring, an implant was successfully installed on the remaining root-remnants of tooth 21.

DISCUSSION: The duration of extra-oral dryness is highly related to RRR, emphasizing the potential compromise to periodontal ligament cell viability with pre-replantation endodontic intervention. Encouragingly, the latest guidelines from the IADT (2020) no longer advocate for extra-oral endodontic treatment.

Moreover, as the rate of RRR is age-related, the ankylosed tooth could be only monitored or restored with composite until the infra-occlusion becomes more noticeable. However, the progression rate of RRR varies considerably between patients and can be unpredictable, necessitating the decision to decoronate the tooth to minimize the negative consequences of infra-occlusion, preserve the remaining bone, and improve the horizontal-vertical dimensions of the alveolar ridge for future prosthesis.

CONCLUSION & CLINICAL RELEVANCE: This case has demonstrated the importance of careful monitoring to detect ankylosis promptly and timely planning of decoronation, benefiting from bone preservation for a future implant. Additionally, it has emphasized the significance of immediately replanting avulsed teeth and initiating the endodontic treatment post-replantation to enhance the likelihood of favorable outcomes.

Authors declare no conflict of interest.

Periodontal modeling and conditioning to avoid fractured teeth extractions: strategies of temporization and prosthetic/aesthetic rehabilitation with BOPT in a clinical case scenario

Nicolas,Obtel[1,2];Corentin,Illand[2];Adel,Hamdani[2];
François,Ferré[2,3,4];Franck,Decup[1,2]
[1]URP 2496, Health Faculty, Université Paris Cité, France
[2]Oral Surgery Department, APHP, Charles Foix Hospital, France
[3]Health Faculty, Université Paris Cité, France
[4]INSERM U1138, Université Paris Cité, Paris, France

Keywords: Fractures, traumatology, BOPT, gum remodelling

Aim(s) of the cases or technique included in the poster:
To restore function and aesthetics after subgingival fractures of the maxillary incisors avoiding extractions by periodontal tissue modelling and conditioning.

Case Presentation / Methodology:
A 22-year-old male patient was victim of a traumatism during summer vacations when it was difficult to find a dentist available. The patient was admitted to the dental emergencies of the Pitié Salpêtriere – Charles-Foix hospitals. Fractures were subgingival on the vestibular side, which prevents bound in good insulation conditions.
Nevertheless, the fractured fragments were temporarily bound to restore the aesthetics for the emergency consultation.
After the hilling of the traumatism, the fractured fragments were removed, the root canal treatments of the 12,11,21,22 were performed, and we placed a partial removable denture to temporize. Then we used the Biological Oriented Preparation Technique (BOPT) to prepare the teeth under the flap (with vertical preparations) and confectioned the temporary crowns, proceeded in crown elongations, and defined the limit of the temporary crowns to respect the biological space and get necessary ferrule effect.
After 8 weeks of hilling, we performed the final restorations using a Digital Smile Design Technic and sealed the dental prostheses.

Discussion:
In this case, the patient is 22, and implant therapy is not recommended at this age. We created enough ferrule effect by modeling and conditioning bone and gingiva while respecting the biological attachment as recommended by periodontists. It was a minimally invasive procedure to avoid any modification of the gum line and the papillae level.

Conclusions & Clinical Relevance:
In certain cases, subgingival crown fracture does not mean tooth extraction if we do not have enough ferrule effect. We can use crown elongations and BOPT to restore a correct ferrule effect to keep the gum line and papillae at the same level.

A statement regarding conflict of interest:
The authors have no conflict of interest to declare.

Renewing Confidence: Autotransplantation in Pediatric Dentistry - A Case Report

Sharifah,Wafa[1];Muhammad Kamil,Hassan[2];
Nurulhuda,Maskim[4];Ema Marlisa,Abdul malek[5];
Nor Nadia,Zakaria[3];Zainal Aalam,Noorhidayah[3];
Nurul Zeety,Azizi[3]
[1]AVISENA Women
[2]Oral & Maxillofacial Clinical Sciences, UNIVERSITI MALAYA
[3]Paediatric Dentistry & Orthodontic, UNIVERSITI MALAYA
[4]Orthodontic, Ministry of Health
[5]Paediatric Dentistry, Ministry of Health

Keywords: Autotransplant, avulsed, aesthetic, discoloured

Aim: To present a case of 12-year-old girl who had undergone autotransplantation as a treatment modality following discoloured poor prognosis replanted tooth

Case Presentation: The patient was a 12-year-old female at the initial presentation. She suffered from avulsion of the upper right central incisor (UR1). Post-replantation, internal root resorption occurred, resulting in the discoloration of UR1. She is not happy with the discolouration and the crooked teeth alignment. She presented with a Class II Division 1 incisor relationship with an increased overjet of 6.0mm and mild crowding of the maxillary arch. After a multidisciplinary team (MDT) consultation, the lower right first premolar (LR4) was chosen as the donor tooth to replace the UR1. Immediate autotransplantation was done and followed by fibre-reinforced splinting for 4 weeks. Root canal treatment (RCT) was initiated within 14 days post-autotransplantation. Due to the Covid-19 pandemic, orthodontic treatment was started 6 months post-RCT. Orthodontic treatment was done to correct malocclusion and facilitate the repositioning of the transplanted premolar. After the completion of the orthodontic treatment, final composite restoration was placed to camouflage the premolar to mimic UR1. Three years post-autotransplantation, the donor tooth remains asymptomatic, and the girl was pleased with the aesthetic outcome.

Discussion: Avulsion is one of the most serious dental injuries. Infection-related (inflammatory) resorption is one of the unfavourable outcomes following the replanted avulsed tooth. In addition to this, the UR1 was severely discoloured. Autotransplantation is a treatment choice to replace a poor prognosis tooth. Autotransplantation of the anterior region often involves challenging requirements as these teeth are placed in the centre of the aesthetic zone. Restoring LR4 to UR1 morphology is indicated to ensure the best aesthetic treatment result following the completion of orthodontic treatment.

Conflict of Interest Statement: The authors assert no conflicts of interest pertaining to this case report.

Dental Helmet : a new cheap technique to get an effective Mouth Guard

Paola,Chiaramonte[1]
[1]RECCHIA Ambulatorio Polispecialistico SRL

Keywords: Mouth Guard

AIM
We all know the utility of Mouth Guards (MG). Yet despite, 47% of athletes don't wear them, because bulkiness and expense .
Our aim was to explore the feasibility of a more cost-effective MG, employing innovative dental strategies.

MATERIALS and METHODS
We use a Charpy-type pendulum for testing, as outlined by Takiki.
Three MG variants were crafted, on the same patient's models.

- A premium benchmark, the MG Dreve- Trilayered professional- laboratory crafted in six hours

- Our new Dental Helmet MG, made by 4 mm EVA, 95 shore, with 1mm of anterior space before all the six teeth , from canine up to canine, getting a Roman arch form . The MG was firmly fitted on premolars and molars . The laboratory work time was of only one hour

- And, as a negative control, traditional 4mm EVA 95 shore, without space, laboratory crafted in 45 minutes

We conducted a comparative test among these three Mouth Guards:
The sensors were the Fiber Bragg sensors. The test was made by Somni Solutions, Dreft NL.

RESULTS
Results revealed our simplest MG, with anterior arch form space, offers superior protection, with a remarkable 94% efficacy according to Fiber Bragg sensor tests, surpassing both the top-tier (90%) and negative control (83%) variants.

DISCUSSION and CONCLUSIONS
Our MG prototype, forged from a single sheet of 4 mm EVA 95 shore material, with a 1 mm anterior space from canine to canine, in arch form, firmly fitted on premolars and molars, gets protection through three distinctive mechanisms:

- Force de-multiplication, via expanded surface area, similar to a warrior's shield,

- Impact absorption facilitated by material deformation, similar to a cushion

- Whole structure deformation, attributed to its arch-like configuration , similar to an arch bridge.

The author declare no conflict of interest.

Therapy of a traumatised central incisor 16 years after unfinished initial treatment

Matthias,Holly[1]
[1]Private Practic for endodontology and dental trauma

Aim:
To show bone regeneration in a long-term radicular infection with massive periapical bone loss around an undeveloped root.

Presentation and Technique:
In 2007 a 14-year-old patient was treated after a pulp necrosis due to dental trauma on an upper central incisor at the Dental university clinic Vienna.
Diagnosis was traumatic pulp necrosis and unfinished apexogenesis. Initial therapy was performed with removing of necrotic tissue and application of CaOH for 4 weeks.
The patient seemed not to care and did not came back for the next appointment.

16 years later she came to our private practice searching for her former therapist with the wish to make her tooth white again.
The situation of the tooth was disastrous and seemed hopeless due to remaining tooth structure, apical bone loss, tissue swelling, buccal fistula and discoloration.
But because of the highly motivation of the patient and the possibility of gaining bone regeneration for further implant-prosthetic reasons a first conservative endodontic treatment was performed.
The procedure included endodontic disinfection, rinsing with NaOCl 3%, application of CaOH. After two weeks and no signs of reducing the fistula an additional rinse with policresulen, a strong antiseptical and denaturating agent, was performed.
Tissue healing was achieved and the tooth filled with MTA, Ever X-flow and a Build up.

Discussion:
Critical evaluation of using the policresulen agent in combination with NaOCL.
Questionable long-term prognosis due to the weakness of remaining tooth structure.
Beneficial post endodontic preimplantologic bone regeneration achieved.

Conclusion & Clinical Relevance:
Patient perception of successful treatment is individual.
The chance of bone healing is present anytime.

There is no conflict of interest present.

Assessing prevalence and response to hard dental tissue trauma among children and adolescents

Luka,Simunovic[1];Bruno,Spiljak[1]
[1]School of Dental medicine, University of Zagreb

Aim: To assess the characteristics of hard dental tissue trauma, its prevalence, and the timing of arrival following the onset of trauma.

Materials and Methods: A retrospective study of patients with hard dental tissue trauma over the last 8 years was conducted, including 570 patients with age range 1-16 years, of whom 57.6% were boys and 42.4% were girls. Chi-square and Fisher's exact test was performed using SPSS statistical software.

Results: 48.1% had uncomplicated enamel and dentin trauma, 28.1% had complicated enamel and dentin trauma, 13.5% enamel fracture, 4.2% uncomplicated crown and root fracture, 3.9% root fracture, 1.8% uncomplicated crown and root fracture, 0.4% infraction, and 0.2% missing data. Soft tissues were involved in 36.5% of cases. In 34.7% of cases, patients arrived a week after the injury, while in 32.6%, within 24 hours. Most patients with root fractures and complicated crown and root fractures arrived within the first day, while the majority of others arrived later ($p<0.001$). Patients arriving on the first day were younger than those arriving a month after the injury ($p=0.029$).

Discussion: Variations in early dental trauma referral rates are influenced by factors such as awareness, access to care, cultural attitudes, and socioeconomic status. The low rate of early referrals suggests dental injuries are often underestimated, with many not seeking prompt treatment possibly due to a lack of understanding of their severity.

Conclusion: The severity of trauma and the age of the subjects greatly influence the timing of arrival; however, it is important to note that a certain number of patients arrive for treatment even a month after the trauma, which necessitates further investigation to determine if this is a form of dental neglect in this group of patients.

Dental avulsion awareness among final year students: A cross-country study

Lara,Vranic[1];Lana,Bergman[1]
[1]School of Dental medicine, University of Zagreb

Aim: This study aimed to evaluate the knowledge and preparedness of final-year dental students to manage dental trauma, focusing on their ability to respond to cases involving the eruption or traumatic displacement of teeth shortly before graduating from dental school.

Materials and Methods: An online survey was administered to final-year dental students across several countries: Croatia, Slovenia, Macedonia, Bosnia and Herzegovina, and Serbia. The survey was divided into three sections: demographic data, knowledge-based questions, and self-assessment. The Kruskal-Wallis test was applied for statistical analysis to compare the knowledge levels among students from different faculties.

Results: The survey included 189 students, with an average age of 25. A significant variance in knowledge levels was found among the students from the participating faculties ($p<.001$). Slovenian students scored the highest, with an average of 85.4%, showing no significant difference from Croatian and Serbian peers. Serbian students were more self-critical regarding their knowledge. Nevertheless, students across all surveyed countries acknowledged the need for additional education on dental trauma management.

Discussion: The findings indicate a disparity in the readiness and understanding of dental trauma among dental students, with Slovenian students displaying relatively higher knowledge. This discrepancy highlights the necessity for a standardized curriculum focused on dental trauma. The self-criticism observed among Serbian students may reflect a broader awareness of educational gaps, suggesting an opportunity for targeted educational interventions.

Conclusion: The study underscores the need for enhanced educational programs on dental trauma management within dental schools. Given the critical nature of timely and effective treatment for dental injuries, it is imperative that future dentists are well-equipped with the necessary knowledge and skills. Additional education on this topic is essential to prepare graduating students for real-world challenges they will face in clinical practice.

A statement regarding conflict of interest: The authors declare no conflict of interest.

TEACHING PRACTICES IN DENTAL TRAUMATOLOGY IN FRENCH UNIVERSITIES

Laurence,Lupi[1,2];Marine,Pettiti[1,2];Margaux,Dubois[1,2];Marie-France,Bertrand[1,2]
[1]Côte d'Azur University - UFR Odontologie, Nice, France
[2]Nice University Hospital - Pôle Odontologie, Nice, France

Aim: Despite the significance of dental traumatology (DT) in dentistry, there is a lack of information on how, where, and by whom DT is taught in the French curriculum. The aim of this study was to investigate teaching practices in DT in France.
Materials and Methods: All the 15 French university dental schools with comprehensive curricula were invited to fill in an online questionnaire. The survey comprised both closed-ended and open-ended questions regarding teaching practices in DT, with one response requested per university institution.
Results: All French university dental schools included DT in their curriculum, with theoretical teaching consistently positioned in the second academic cycle. While four universities had a dedicated cross-disciplinary teaching unit, DT was predominantly taught within Pediatric Dentistry and Restorative Dentistry & Endodontics courses. Several forms of training implemented with simulation were developped in only four universities, conducted in-person through OSCEs and role-playing games, while one university opted for customized software. Students from all clinical years (4th to 6th years students) were involved in managing traumatic dental injuries in nine universities, with variations in patient follow-up responsibilities. Only one university reserved them for dental interns and practitioners alone. Assessment methods varied, with eight universities employing solely final exams (written questions or MCQ), while five universities used both continuous assessments and final exams (mostly MCQ and written questions).
Discussion: Theoretical teaching practices in DT exhibited great variations between French Universities, but clinical practice is both intense and early. Students are immersed in both emergency and follow-up of injured patients.
Conclusions: The strength of DT education in France is probably the high clinical involvement of dental students whereas the weaknesses could be the heterogeneity of theoretical teaching.

All authors declare no conflicts of interest.

Treatment of Uncomplicated Enamel-Dentin Fracture using Injection Moulding Technique: A Case Report

Alp,Akca[1];Figen,Eren[1];Betul,Kargul[1]
[1]Dept. of Paediatric Dentistry, FDS, Marmara University

Keywords: Dental trauma,enamel dentin fracture, injection moulding technique

Aim: Dental trauma may have a severe impact on the social and psychological wellbeing of a patient. Contemporary Injection Moulding Technique(IMT) allow clinicians to restore fractured permanent incisors with good predictability, restoring both the esthetics and function of the affected tooth. This case report describes the step-by-step of the restoration of permanent incisors with uncomplicated enamel dentin fracture using IMT.
Case Presentation: A 9-year-old girl referred to the clinic 2 hours after suffering trauma with an uncomplicated enamel dentine fracture on #11, #21 after falling in the school playground.
Methodology: After sealing the dentin tubules in fracture site, impression taken from the fracture site with silicone impression material. With taken impression diagnostic wax-up made in laboratory by dental technician. A clear silicone matrix(Exaclear,GC) silicone was compressed against the wax-up using a spaced tray. In the 2nd session, under rubber-dam isolation, beveling was performed. Then, 37.5% phosphoric acid and universal adhesive resin(G Premio Bond, GC) were applied as manufacturer's instruction and cured with light. PTFE tape was used to protect the teeth that were not to be etched and bonded. Holes were made through the clear silicone stent at the incisal edge level. The syringe of the composite(G-ænial Universal Injectable, GC) was injected through the holes in the clear stent once that was seated fully in the mouth and light cured. Excess resins cleaned and then finishing and polishing were performed.
Discussion: This technique can provide aesthetic and predictable results in a short chair time, especially in multiple dental fractures in children.
Conclusion & Clinical Relevance: The use of IMT was effective in maintaining colour stability, surface smoothness in enamel-dentin fractures and have remarkable clinical, radiographic results. 6- and 9-months follow-up examination showed that the teeth remained functional, esthetically favorable, and asymptomatic.
Disclosure statement: The authors report no conflicts of interest.

To brace or not to brace? The benefits of early orthodontic alignment following traumatic dental injuries

Jessica,Cooper[1,2];Russel,Al-Hashimi[1];Siobhan,Barry[1,2]
[1]University Dental Hospital of Manchester
[2]University of Manchester

Aim: To demonstrate the benefits of multidisciplinary team management and early orthodontic alignment following traumatic dental injuries.

Case Presentation: A 13-year-old boy presented to the University Dental Hospital Manchester 3 days following a fall. UR1 had been avulsed and reimplanted with an 80-minute extra-alveolar time. UR2 was severely intruded and had been surgically repositioned within a local emergency department. Upon presentation, the traumatised teeth had been splinted flexibly and passively, however UR2 remained in an intruded position. The patient had a class II skeletal pattern, 13mm overjet and large midline diastema. He was managed jointly by the departments of orthodontics and paediatric dentistry. The existing splint was removed and a sectional fixed appliance placed. UR1 and UR2 were extirpated 2 weeks post-trauma and have remained stable throughout completion of root canal treatment. Following orthodontic repositioning UR2, the patient's diastema has been closed and he is continuing treatment with a twin block appliance.

Discussion: Avulsed and severely intruded teeth have a guarded prognosis, with high risk of infection related and replacement resorption. (1) Though guidance does not recommend orthodontic tooth movement until periodontal healing has occurred; to prevent ankylosis in an unfavourable position, anticipatory orthodontic treatment using light force can be attempted in high-risk cases. (1) In such circumstances, the benefits of tooth alignment should be weighed up against the increased risks of orthodontic root shortening and resorption caused by damage to the periodontium.

Conclusion & Clinical Relevance: With careful case selection, early orthodontic alignment may be considered to prevent adverse outcomes following avulsion or severe intrusion injuries.

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Digital-assisted tooth autotransplantation for interdisciplinary rehabilitation of the esthetic zone

Po-Jan,Kuo[1,2,3,4,5];John, Jin-jong,Lin[3];
Nancy, Nie-Shiuh,Chang[1,3]
[1]Diplomate,The Taiwan Academy of Periodontology
[2]Assistant professor, National Defense Medical Center, Taiwan
[3]Private practice, Lin
[4]Private practice, Eutopia Dental Clinic, Taiwan
[5]Zimmer Orange Institution

Keywords: Tooth Autotransplantation, Orthodontic treatment, Digital dentistry

Aim:
To assess digital-assisted autotransplantation of tooth in the anterior maxilla as a reliable treatment option for improved function and aesthetics, particularly in an adolescent patient.

Case Presentation:
An 18-year-old male presented with discomfort in his maxillary left central incisors due to a history of trauma. Tooth #9 had internal resorption and underwent root canal treatment five years ago but was re-injured during sports activities. The patient also exhibited class III malocclusion, anterior open bite, and a left-sided lower midline shift. A multidisciplinary and digital approach, including comprehensive planning and a 3D-printed template, was utilized to autotransplant the #28 premolar to #9. At the 24-month follow-up, the teeth were well aligned after the orthodontic intervention, and the transplanted tooth remained asymptomatic, with harmonized soft tissue outcomes and no radiographic evidence of periapical pathosis.

Discussion:
Autotransplanted teeth demonstrate behavior similar to natural teeth and mitigate complications associated with dental implants in growing patients. The presence of periodontal ligament (PDL) in the donor tooth supports continued bone and soft tissue formation at the recipient site and orthodontic tooth movement. Biological understanding, technology, and technique advancements have enhanced autotransplantation's predictability and long-term success. Innovative digital workflows enable precise pretreatment planning of guided autotransplantation within an interdisciplinary framework.

Conclusion & Clinical Relevance:
This case report highlights successful interdisciplinary management and utilization of digital techniques for autogenous tooth transplantation, resulting in a satisfactory esthetic outcome.

A statement regarding conflict of interest:
The author reported no conflicts of interest related to this study.

Two cases of custom-made sports mouthguards for the prevention of dental trauma in athletes with cleft lip and palate

Gen,Tanabe[1,2];Kiyonori,Hanazawa[3];Mikiko,Mano[3];
Kaito,Togawa[1,2];Kei,Miyazawa[4];Yuka,Sumitai[5];
Naoto,Suda[3];Toshiaki,Ueno[1,2]
[1]Sports Dentistry, Meikai University School of Dentistry
[2]Sports Dentistry, Tokyo Medical and Dental University Hospital
[3]Orthodontics, Meikai University School of Dentistry
[4]Meikai University School of Health Sciences
[5]General Dentistry4, The Nippon Dental University Hospital

Introduction
As the use of sports mouthguards becomes more widespread, there is an increasing need for a variety of solutions for patients with different occlusion and dental treatments. In this case study, we report on the support provided by sports mouthguards for the prevention of dental trauma in athletes with unilateral cleft lip and palate (CLP) at different stages of treatment. The consent of both patients was obtained for this report.
Cases
Case 1; 22-year-old male judo athlete with bilateral CLP who underwent lip augmentation at 5 months and palatoplasty at 1 years old. He was undergoing orthodontic treatment with multi-bracket devices prior to orthodontic surgery and requested a mouthguard to prevent oral trauma. The mouthguard designed to fit the orthodontic appliance was fabricated and the occlusal relationship was adjusted appropriately.
Case 2; 24-year-old male American football player with right-sided CLP who underwent lip augmentation at 5 months, palatoplasty at 2 years old, and orthodontic treatment from 6 to 17 years old. The maxillary left lateral incisor palatal was displaced as microdontia and had no intervention. The mouthguard designed to modify the malalignment was fabricated.
Conclusions and Clinical Significance
The CLP cases are diverse, and their treatment is long-term, so the anatomy of the oral cavity continues to change. To safely continue sports activities, it is desirable to provide custom-made mouthguards that correspond to the individual dental status, occlusal relationship, and stage of treatment.

The Analysis of the Influence of COVID-19 Pandemic and Endemic on Traumatic Dental Injuries

Joon-Young,Koo[1,2];Nah,Jeung Seon[1];Chae,Yong Kwon[1];Lee,Ko Eun[1];Kim,Mi Sun[3];Nam,Ok Hyung[1,3];Lee,Hyo-Seol[1,3];Choi,Sung Chul[1,3]
[1]Kyung Hee Dental Hospital
[2]Department of Dentistry, Graduate School, Kyung Hee University
[3]Pediatric Dentistry, School of Dentistry, Kyung Hee University

Aim
The objective is to quantify and analyze the impact of COVID-19 on the characteristics
of patients with traumatic dental injuries (TDIs), as well as to explore the recovery of
daily life from the impact of COVID-19.

Materials and Methods
This retrospective study analyzed the medical records of TDI patients who visited the
Department of Pediatric Dentistry at Kyung Hee Dental Hospital, Seoul, Korea,
between 2018 and 2024. Patients were categorized into three groups: pre-COVID-19
(n=719), COVID-19 (n=343) and post-COVID-19 (n=328). Various factors, including
gender, age, cause, place, and TDI types, were statistically analyzed using the
independent samples t-test, Chi-square test, and Fisher's exact test.

Result
The investigation revealed a significant decrease of more than half in the number of
TDI patients following COVID-19. The mean age of TDI patients was 4.82 ± 3.09
years, with the most prevalent age group being 3–6 years old. Regarding the locations
of TDI incidents, the proportion occurring in outdoor or indoor leisure facilities
decreased by half during the COVID-19 period. However, no significant differences
were observed in the distribution of gender, age, cause, and type of TDIs.

Discussion
The decrease of TDI patients is believed that caused by limitations on outdoor activities
and the transition to a non-face-to-face era. However, it is required to distinguish with
effects on the decline in fertility, because the post-COVID-19 period also revealed
decreased TDI patients.

Conclusion
Based on these results, it can be said that COVID-19 affected the frequency of the
occurrence rather than the characteristics of TDI patients. COVID-19 did not
significantly affect the ratio of TDI patients by gender, age, cause and type of TDIs.

The statement regarding conflicts of interest
The author declares that there is no conflict of interest.

Assessment of Sports Instructors' Awareness and Perception of Mouthguard Usage in the South Chennai Region

Sumaiyya,Saleem[1,2];Dhanraj,K[1,2];Swetha,R K[1,2]
[1]Sathyabama Institute of Science and Technology
[2]Sathyabama Dental College and Hospital

Keywords: Mouth guards, Sports dentistry, Prevention, Mouth protectors

Author Affliation

First Author
Dr. Sumaiyya S,
Assistant Professor,
Sathyabama Dental College and Hospital
Chennai, India- 600119

Co- Author 1
Dr. Dhanraj K
Associate Professor,
Sathyabama Dental College and Hospital
Chennai, India- 600119
Co- Author 2
Dr Swetha R K
BDS resident
Sathyabama Dental College and Hospital
Chennai, India- 600119

Aim:
To evaluate the level of awareness and perception of sports instructors regarding mouth guard usage in South Chennai region.

Materials and Methods:
The study was conducted by means of a bilingual questionnaire which was distributed to the sports instructors of contact sports academies individually by the investigator (hand in hand) which included demographic data, awareness and perception regarding the usage of mouth guards.

Result:
Mann Whitney U test and Kruskal-Wallis test were used to analyze the continuous independent variable and the dependent variables. Frequency distribution with percentage was used for categorical variables. 76.6% were aware of the mouthguards, however their usage was very only 26%.

Discussion:
19%-36% of Oro-facial trauma are Sports related injuries which is a growing concern that requires immediate attention. The results showed that the majority of sports instructors in South Chennai region are aware of mouthguards but do not recommend their usage at all times. It was observed that 55.3% of the instructors think it is essential for a dental surgeon to be part of the team. As 68.1 % of sports instructors demonstrated interest for acquiring more information about the appliance, it is necessary for dental professionals to educate regarding the availability and usage of mouthguards.

Conclusions:
The results showed that the majority of sports instructors in South Chennai region are aware of mouthguards but do not recommend their usage at all times.

All the authors have no conflict of interest.

Evaluating the learning curve for dynamic navigation procedure during endodontic management of traumatized permanent maxillary anterior teeth with pulp canal calcification: a prospective study

Sidhartha,Sharma[1];Vijay,Kumar[1];Amrita,Chawla[1];
Ajay,Logani[1]
[1]All India Institute of Medical Sciences, New Delhi

Keywords: Pulp canal calcification, Dynamic navigation system

Aim: Pulp canal calcification (PCC) is a common complication following dental traumatic injuries. Locating and navigating these canals in the event of pulp necrosis is considered a case of extreme difficulty and may result in considerable tooth damage, perforations, and canal deviation. In such instances, novel guidance techniques have been employed. The most recent of these techniques is a dynamic navigation system (DNS) procedure which has a steep learning curve. The present study aimed to evaluate the learning curve for DNS procedure in traumatized maxillary anterior teeth with PCC.
Materials and Methods: Institutional ethical approval was obtained. A convenient sample size of 20 mature permanent maxillary anterior teeth with partial or complete PCC at or beyond the coronal third of the root in periapical radiographs and diagnosed with pulp necrosis and apical periodontitis were included. A pre-operative cone beam computed tomographic (CBCT) scan was performed. An experienced endodontist with no prior navigation experience was asked to locate the canal with DNS system (Navident, Claronav, Canada). Once the canal was located, a post-operative CBCT scan was conducted to evaluate the linear deviation, angular deviation, chairside time, and complications (if any). Appropriate statistical tests were applied.
Result: The mean linear and angular deviation were found to be 0.69 mm and 2.125 degree respectively. Average chair side time was 33.75 minutes. The plateau phase was obtained after 11 cases.
Discussion: It is the first study evaluating the learning curve of a DNS procedure in endodontics. Further, a larger sample size study comparing operators with different levels of experience are required.
Conclusions: The DNS technique is safer and clinically feasible, but has an inherent learning curve. Measured outcomes improve with each case until reaching the plateau phase.
Conflict of interest: The authors report no conflict of interest in the present research.

Management of Complicated Crown-root Fracture with Intrusive Luxation of Maxillary Incisors : 5-Year Follow-up

Jungmin,Eum[1];Taesung,Jeong[1];Jonghyun,Shin[1];
Soyoung,Park[1];Eungyung,Lee[1]
[1]Pusan National University Dental Hospital

Introduction
Dental traumatic injuries are common in children and young adults. Intrusions and crown-root fractures are relatively less common but lead more serious consequences once it occur. Intrusions impair the neurovascular supply of the tooth and increase the risk of necrosis and root resorption. Similarly, complicated crown-root fractures may involve pulpal exposure, increasing the risk of pulpal infection.

Case representation
An 8-year-old girl was hit by a motorcycle, resulting in the severe intrusion of the immature left permanent incisor and a complicated crown-root fracture. The tooth was immediately repositioned (surgical extrusion), and the crown fragment was removed. The tooth was splinted within 2 hours following the injury. A partial pulpotomy was performed one day after the trauma, and the crown was restored 2 weeks later. The splint was removed 6 weeks later. After 2 months, external root resorption was found radiographically, and root canal treatment was accomplished. Two months later, the clinical and radiological symptoms disappeared. An MTA plug was placed into the canal, and the final esthetic restorations were done. At the 5-year follow-up, the teeth revealed healthy periodontium and good esthetics.

Discussion
The treatment strategy in the case study has been determined by the degree of intrusion and the stage of root development. Bioceramics offers enhanced sealing, antibacterial properties, biocompatibility, and hard tissue induction. In this case, the teeth had full-length roots with thick dentinal walls and half open apex. Therefore, the intracanal calcium hydroxide medication was used for disinfection of the root canals followed by a bioceramic plug as a definitive treatment.

Conclusion & clinical Relevance
The root resorption might occur after the severe intrusive dental trauma and crown-root fractures. The case described here presents the proper management with surgical extrusion and apexification of the traumatized teeth.

Change in Oral and Maxillofacial Injuries of Pediatric Patients in the COVID-19 Pandemic: A Single Center Study

Yuri,Jeong[1];Jeong,Taesung[1];Shin,Jonghyun[1];
Park,Soyoung[1];Lee,Eungyung[1]
[1]Pusan National University Dental Hospital

Authors: Yuri Jeong ,2, Taesung Jeong ,2, Jonghyun Shin ,2, Soyoung Park ,2, Eungyung Lee ,2
Author affiliation:
Department of Pediatric Dentistry, School of Dentistry, Dental and Life Science Institute, Pusan National University, Yangsan, Republic of Korea
2 Department of Pediatric Dentistry, Dental Research Institute, Pusan National University Dental Hospital, Yangsan, Republic of Korea

Aim: The purpose of this study is to analyze changes in dental trauma in children under the age of 12 during the period of Coronavirus Disease 2019 (COVID-19).
Materials and Methods: From March 2018 to February 2020, subjects in the pre-COVID-19 period were classified as the Pre-COVID-19 group, and from March 2020 to March 2022, subjects in the post-COVID-19 period were classified as the COVID-19 group. Information related to trauma was collected through electronic medical records.
Results & Discussion: The number of trauma patients before and after the outbreak of COVID-19 decreased significantly. During the COVID-19 period, there was no significant difference in the male-female ratio or the distribution order of age groups. In the COVID-19 group of permanent teeth, the ratio of trauma caused by personal mobility was higher than trauma caused by sports. In the COVID-19 group of permanent teeth, the ratio of crown fracture with pulp involvement was significantly higher than the ratio of crown fracture without pulp involvement. Changes in trauma patterns caused by COVID-19 were observed more clearly in school-aged children than in preschool children.
Conclusions & Clinical relevance: In the COVID-19 pandemic situation, there have been changes in the number and patterns of pediatric dental emergency patients and traumas. This study is expected to be used as a good educational basis for knowing that frequent diagnoses can change due to changes in the environment such as COVID-19.
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Delayed replantation of an avulsed permanent incisor and endodontic management using bioceramics - A one year follow-up

Dhanraj,Kalaivanan[1,2,4,5];Logarani,Alagarsamy[4,6];
Sumaiyya,Saleem[2,3]
[1]Associate Professor, Department of Pediatric Dentistry
[2]Sathyabama Dental College,Chennai
[3]Lecturer, Department of Pediatric Dentistry
[4]Dhaarani
[5]Clinic Head and Pediatric Dentist
[6]Periodontist

Keywords: Incisor, Tooth replantation, Calcium silicates, Root resorption, Prognosis

Authors and affiliations
Author:
Dr.Dhanraj Kalaivanan
INDIA
Co-Author:
Dr.Logarani Alagarsamy
INDIA
Co-Author:
Dr.Sumaiyya Saleem
INDIA

Aim(s):
This case report aims to contribute to the existing body of literature on observations of the use of bioceramics in instances of delayed replantation as a means of impeding the occurrence of root resorption in avulsion.
Case Presentation:
A 10-year-old male patient reported four hours later after the trauma to our private operatory with the chief complaint of a dislodged lower right central incisor. History revealed that he had a brawl at school leading to the trauma in 41. Hence a delayed replantation was planned after obtaining informed consent from the parent. Endodontic treatment was performed with bioceramic sealer extra-orally and splinted with 0.4mm SS wire semi-rigid splint for 2 weeks. The patient was asymptomatic clinically and radiographically till one year of follow-up.
Discussion:
The avulsion of permanent mandibular incisors is quite rare, with only fifteen cases reported as cited by Kaur et al. In our present case, the chances of PDL survival were negligible and hence it was treated as delayed replantation with poor prognosis. Hence, an extraoral root canal treatment was performed and splinted using a semi-rigid composite splint for a duration of two weeks. Calcium -silicate-based sealers alter the dentin environment to a more alkaline pH, potentially impeding osteoclastic activity and subsequently preventing any inflammatory root resorption. Consequently, in our case, a MTA-based sealer was chosen due to the increased likelihood of resorption as a result of prolonged dry time.
Conclusion & Clinical Relevance:
This case report highlights the advantages of using calcium-silicate-based root canal sealers in instances of delayed replantation following avulsion, to prevent root resorption.
Conflict of Interest: The authors and co-authors declare that they have NO affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Multidisciplinary Approach in Management of Complicated Crown Root Fracture: A Case Report

Ahmad,Shaqir[1];Ahmad Shuhud,Irfani Zakaria[2];
S. Nagarajan,M.P Sockalingam[2];Noor Sam,Ahmad[2]
[1]UKM Specialist Children's Hospital
[2]National University of Malaysia

Multidisciplinary Approach in Management of Complicated Crown Root Fracture:
A Case Report

Ahmad Shaqir Saiful Bahiar1, Ahmad Shuhud Irfani Zakaria2, S. Nagarajan M.P Sockalingam2, Noor Sam Ahmad3.
1Paediatric Dentistry Unit, Department of Surgery, UKM Specialist Children's Hospital, Kuala Lumpur, Malaysia.
2Paediatric Dentistry Unit, Department of Family Oral Health, National University of Malaysia, Kuala Lumpur, Malaysia.
3Orthodontic Unit, Department of Family Oral Health, National University of Malaysia, Kuala Lumpur, Malaysia.

Aim: Dealing with a complex crown-root fracture is challenging because it involves the pulp and the fracture line may extend beneath the alveolar crest, potentially affecting the periodontium's integrity. To ensure successful aesthetics and optimal tooth function while preserving periodontal integrity, a thorough evaluation and a multidisciplinary approach are essential. Here, we share a case of a complicated crown-root fracture managed through a comprehensive multidisciplinary strategy.

Case Presentation: A 13-year-old patient alleged motor-vehicle accident and sustained a complicated crown root fracture of the upper right anterior tooth. Clinical and radiological examination revealed an oblique fracture involving one-third of the crown, from disto-incisal extending beneath the alveolar crest. An interdisciplinary approach was used starting with root canal treatment, orthodontic extrusion to move the fracture line above the alveolar bone and finally restored using anterior composite crown.

Discussion: Orthodontic extrusion is employed to expose the fracture line and ensure a secure restoration seal. Although it requires a longer treatment duration, it promotes favorable gingival and periodontal health while delivering satisfactory aesthetic results. Moreover, it avoids causing loss of alveolar bone or compromising periodontal support.

Conclusion and Clinical Relevance: Conclusion and Clinical Relevance: Multidisciplinary approach in management of dental trauma is essential to achieve favourable treatment outcome.

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Total Biodentine Obturation in Managing an Immature Permanent Incisor with External Inflammatory Root Resorption Secondary to Avulsion

Othman,Zuhir[1];Nurhidayah,Muhd Noor[1];
Mimi Syazleen,Abdul Rahman[2];Aminah,Marsom[1]
[1]Department of Paediatric Dentistry, Selayang Hospital
[2]Department of Paediatric Dentistry, Malacca Hospital

Keywords:biodentine; immature tooth; root resorption; trauma

Introduction
External inflammatory root resorption (EIRR) is a severe complication of replanted avulsed permanent incisors, which can accelerate tooth loss in young patients. Tricalcium silicate material such as Biodentine has been suggested to manage EIRR due to its ability to strengthen the weakened tooth and arrest the root resorption process. This case report evaluates the treatment outcomes associated with total Biodentine obturation in managing EIRR in an immature permanent incisor following avulsion.

Case Presentation
A ten-year-old boy was referred to us with a history of an avulsed upper right central incisor and prolonged splinting following its replantation six months prior. Clinical and radiographic examinations revealed that it sustained an enamel-dentine fracture with irregular radiolucency on the root surfaces, which indicated EIRR. We initially treated it with a corticosteroid-antibiotic paste, followed by calcium hydroxide intracanal medicament before completing the Biodentine obturation. We reviewed the patient regularly and documented the treatment outcomes at 9, 12, 18 and 24 months post-obturation.

Discussion
The findings demonstrated evidence of arrested root resorption and hard tissue repair, thus corroborating the role of Biodentine in managing EIRR as suggested by the literature. Its biomineralisation capabilities and bioactive properties increase the tooth's compressive strength, hydroxyapatite deposition and calcium ion release, thus stabilising the weakened tooth. We found that the medicament protocol with Biodentine obturation strengthens the tooth, inhibits the progression of root resorption and allows clinical healing of periodontal ligament and bone.

Conclusion and Clinical Relevance
The bioactive properties of Biodentine suggest that it can be valuable in managing EIRR in immature permanent teeth following avulsion. This case illustrates that total Biodentine obturation offers a viable alternative that provides positive treatment outcomes in dental traumatology when regenerative endodontics is not possible, as in this case.

Conflict of Interest
The authors report no conflict of interest.

A Novel Dental Trauma Index - Investigating the Epidemiology of Traumatic Dental Hard Tissue Injuries

Siobhan,Barry[1,2];Reem,Almutairi[1];Ece,Eden[3]
[1]The University of Manchester, United Kingdom
[2]Manchester University NHS Foundation Trust, United Kingdom
[3]Ege University, İzmir, Turkey

Aim: Investigating the epidemiology of traumatic dental injuries (TDIs) among paediatric patients using the novel Eden Baysal Dental Trauma Index (EBDTI).

Materials and Methods: This prospective case note analysis of all patients attended with a diagnosis of dental trauma at the Department of Child Dental Health, The University Dental Hospital of Manchester (UDHM) between September 2023 and February 2024. Data included patient gender, age, date of trauma, treatment prior attending to UDHM, diagnosis, and treatment required. Findings were recorded in Excel according to EBDTI. Chi-square test assessed differences in TDI occurrence.

Results: Sixty-three teeth in 40-patients were evaluated. Twenty-eight patients were male, with a mean age of 7.4 years. "Review-only" was the most common intervention prior to referral (33.3%). Males had significantly higher TDIs ($p<0.05$). The most common diagnosis in both dentitions was crown fracture (37.5% permanent-dentition, 30.4% primary-dentition). Upper central incisors were most commonly affected (33% primary, 40% permanent). The most common treatment was extraction in the primary-dentition (22.2%) and RCT in the permanent-dentition (25%). Nine teeth exhibited multiple injuries (4 primary and 5 permanent). Maturity of root apex showed difference in the distribution between the permanent and primary dentitions (primary-dentition an immature apex accounting 69.6% of teeth, permanent-dentition mature apex comprising 67.5% of teeth).

Discussion: Higher prevalence of TDI in males aligns with previous literature, suggesting potential gender-related risk factors. Utilising the EBDTI was instrumental in providing a clear recording of the presence of multiple injuries and was particularly valuable in assessing the maturity of the root apex, a parameter not routinely recorded previously.

Conclusion: Study sheds light on TDI distribution and characteristics, highlighting gender disparities and primary-permanent dentition differences.

Conflict of Interest Statement: No conflicts of interest associated with this research study.

The Outcome of Revascularization Treatment for Necrotic Immature Permanent Teeth: 2D and 3D Radiographic Evaluation Study

Lama,Awawdeh[1,2,3];Tasneem,Al Othman[3];
Aladdin,Al Qudah[1,2,3]
[1]Department of Conservative Dentistry
[2]Faculty of Dentistry
[3]Jordan University of Science and Technology

Keywords: Revascularization, 3D CBCT

Aim: to evaluate clinical and radiographic outcomes of regenerative endodontic therapy (RET) applied to necrotic immature permanent teeth using non-setting calcium hydroxide employing 2-dimentional (2D) and 3-dimentional (3D) radiographic assessment.
Materials and Methods: 28 necrotic immature permanent teeth treated using a revascularization protocol were followed up clinically and radiographically up to 24 months. Assessment criteria included tooth survival, clinical success rates, resolution of periapical pathology, root length, dentine thickness, apical closure, radiographic root area, and intracanal calcification.
Results: clinical success and survival rates were 96.4% and 100% respectively. The mean PAI and CBCTPAI scores showed significant decrease over the follow-up period ($P<0.000001$) in 2D and 3D CBCT. Complete radiographic resolution in 2D periapical radiography was (73.07% at 12-month) (80% at 24-month), and in 3D CBCT 65.38 % with no significant difference in the lesion size reduction.
Cumulative increase in root length was found in 25% using 2D and none in 3D CBCT. Cumulative increase in dentine thickness was seen in 64.28% in 2D, and 56% in average of MD and BL planes in 3D CBCT. Change in radiographic root area and apical diameter was seen in 58.33% and 82.1% respectively in 2D, and in 54.54% and 88% respectively in CBCT images. Intracanal calcification was demonstrated in 26.92% and 42.85% of cases in 2D and 3D CBCT respectively.
Discussion: revascularization of necrotic immature permanent teeth using Ca(OH)2 as intracanal medicament has a favorable clinical and radiographic outcome. Among all assessed factors; amount of bleeding, and gender were significant for change in root development.
Conclusions: RET stands as a promising viable treatment for immature teeth with necrotic pulps; allowing for continued root development. Changes in the apical diameter were most evident and frequent radiographic outcome. 3-dimensional CBCT can be a valuable research tool in analyzing root development in RET, but not for routine monitoring of patients.
The authors declare no conflicts of interest.

Understanding Failures of RET and exploring management options

HonSingJames,Lai[1,2];Anne C,O'Connell[1,2]
[1]Trinity College Dublin
[2]Dublin Dental University Hospital

Keywords: Regenerative endodontic treatment, dental trauma, immature permanent teeth, dens evaginatus

Regenerative endodontic treatment (RET) holds promise for preserving immature permanent necrotic teeth with trauma history or developmental anomalies such as dens evaginatus (DE). The current treatment principle encourages continuous root development in immature permanent necrotic teeth. RET in immature permanent necrotic teeth with DE shows a higher success rate compared to those with a history of trauma.

Aim : To compare the reported failure rates of RET between immature permanent teeth affected by trauma and Dens evaginatus anomaly and explore what factors contribute to these failures.

Materials & Method : A literature review was conducted using keywords: RET, revascularisation, DE, immature permanent teeth, dental trauma, and outcomes.

Failures after RET for teeth with trauma history have been documented in the literature, and RET appears to be less predictable than for DE cases. Definition of failure include criteria such as the presence of radiolucency, reinfection, and inadequate continuous root development. Other factors may be also involved including the irrigant used, the timing of the procedure, the presence of existing infection. Clinicians need to be aware that failures can occur, and need to be able to manage the clinical dilemma. This presentation will review the recent literature and summarise the criteria for failure, the factors identified in the reported failures, as well as highlighting the available management options for individuals where RET has failed.

Conclusions : There is a difference in failure rates between teeth with a traumatic dental injury and teeth with DE. Multiple factors have been implicated. Failure of the root to develop is not always considered a failure as clinically the tooth may be maintained in the oral cavity in the absence of infection. Management options are unique to the particular individual.

Development and preliminary validation of Oral Re-injury Anxiety Scale for boxers aged 10 to 16 years

Mugilan,Ravi[1,2];Nitesh,Tewari[2];Vijay Prakash,Mathur[2]
[1]Department of Dentistry, AIIMS, Raipur, India
[2]Division of Pediatric Dentistry, CDER, AIIMS, New Delhi

Authors:
Dr Mugilan Ravi, Senior Resident, Dentistry Department, AIIMS, Raipur, India
Dr Nitesh Tewari, Additional Professor, CDER, AIIMS, New Delhi, India
Dr Vijay Prakash Mathur, Professor and Head, CDER, AIIMS, New Delhi, India

Aim:
To develop and validate an assessment tool to explore the presence of re-injury anxiety following orofacial trauma in boxers aged 10 to 16 years.

Methodology:
An exploratory, sequential, mixed-method study was conducted in four-phases to develop and validate an assessment tool to explore the presence of re-injury associated anxiety in young boxers.
Phase I: Items were generated following literature search and Focus-Group Discussions (FGD).
Phase II: Subsequent FGD was conducted with three experienced boxing coaches to assess face-validity, followed by two rounds of scrutiny by 2 expert groups to assess the content-validity, respectively.
Phase III: The modified tool was pre-tested on an independent sample of young boxers.
Phase IV: The modified tool was administered to one-hundred-and-eighty-two young boxers and their responses were subject to an Exploratory-Factor-Analysis to determine the construct validity of the tool.

Results:
From the 29-items devised initially, the tool was sequentially modified. An average Scale-level CVI of 0.9 and Universal agreement of 0.526 was obtained in phase II, which resulted in the inclusion of 20 items for the final phase. From the factor-analysis, a two-factor structure emerged, which explained 27% of the variance in the construct.

Discussion:
Further confirmatory factor analysis and test-retest reliability will aid to establish validity of the tool. The baseline record obtained can aid in assessing the rehabilitation outcome and fitness of the athlete to resume the sport following orofacial injury.

Conclusion:
Through this research, a 10-item-scale with high face and content validity, and acceptable reliability, was developed to assess the presence of re-injury anxiety following orofacial injury in boxers aged 10 to 16 years.

Conflicts of Interest:
None.

Dental undergraduate students' ability in the diagnosis of root fractures: Comparative analysis of different imaging methods

Priscilla,Soares[1];Juliana,Borges[1];Jessica,Rodrigues[1];
Gabriella,Barbosa[1];Carlos,Soares[1]
[1]Federal University Of Uberlandia

Keywords:cone-beam computed tomography; dental students; diagnosis; education; radiology; tooth fractures

Priscilla B. F. Soares, Juliana S. Borges, Jessica F. Rodrigues, Gabriella L.R. Barbosa, Carlos J. Soares
School of Dentistry, Federal University of Uberlândia, MG, Brazil.

Background/Aim: The aim of this study was to evaluate the diagnostic ability of dental undergraduate students to detect horizontal and oblique root fractures using different imaging techniques.
Material and Methods: Nine teeth were selected and randomly divided in three groups in order to create a fracture line without fragments separation: control (without fracture), horizontal root fracture (HRF), and oblique root fractures (ORF). The root fracture was created using perpendicular force and was confirmed by transillumination. A model with two adjacent teeth was created, and different imaging techniques were performed: conventional periapical radiograph; mesially and distally shifted periapical radiographs; cone-beam computer tomography (CBCT). The students (n=20) that had participation on dental trauma clinic were invited to identify root fractures by a five-point scale: (i) fracture definitely not present, (ii) fracture probably not present, (iii) uncertain whether fracture is present or not, (iv) fracture probably present, and (v) fracture definitely present. Data were analyzed by Kappa test for agreement evaluation.
Results: Comparing each student to the gold standard, there was a variation in reproducibility and performance from poor to substantial (0.042-0.667). Reproducibility values ranged from poor to good for all periapical radiographs both in the diagnosis of ORF (-0.33-0.667) and in HRF (0-1).
Conclusion: In CBCT images, the students' ability was lower in HRF detection in comparison with the oblique ones. The students showed limited capacity to diagnose root fractures; however, when CBCT was used, the performance was more satisfactory than when periapical radiographs were used.
Conflict of Interest Statement: The authors confirm that they have no conflict of interest.
Supported by: FAPEMIG (Grants APQ-04262-22); CAPES (Grants 001); and CNPq (INCT- 406840/2022-9)

Low intensity pulsed ultrasound (LIPUS) as a therapeutic adjunct to enhance periodontal healing after luxation dental injury

Vijay,Kumar[1]
[1]All India Institue of Medical Sciences, New Delhi, India

Keywords: Luxation Injury, Splinting, Low Intensity Pulsed Ultrasound

Aim: To evaluate the effect of Low Intensity Pulsed Ultrasound (LIPUS) on periodontal healing after luxation injury

Materials and Methods: The study was conducted on ten patients presented to the outpatient department for management of luxated tooth within 48 hours of trauma. Patients were randomly allocated into two study groups. Group I (Control group) teeth were splinted with Titanium Trauma Splint (TTS). Group II (LIPUS group) in addition to TTS splinting the luxated teeth received exposure of LIPUS (30 mw/cm2, 1.5 MHz) for 20minutes with the help of intraoral transducer on every alternate day for two weeks. The splint was removed after completion of specified time for the type of luxation injury in International Association of Dental Traumatology (IADT) recommendations. The tooth mobility of luxated and adjacent healthy tooth was recorded with periotest in terms of perio test values (PTV) at baseline (preoperative), immediately after splint removal and at subsequent follow-ups at 4 weeks, 12 weeks after splint removal.

Result: The PTVs were similar at baseline in both study groups without any statistically significant difference ($p>0.05$). There was significant reduction ($p<0.05$) in tooth mobility in LIPUS group immediately after splint removal and at subsequent follow-up at four weeks. The tooth mobility of luxated teeth in both groups was comparable at 12 weeks follow-up.

Discussion: LIPUS is a widely applied technique for enhancing bone healing in fractures and non-unions. The early stabilization of luxated teeth in LIPUS group could be attributed to its ability to accelerate periodontal ligament reconstruction and alveolar bone regeneration.

Conclusions: LIPUS can be used as a therapeutic adjunct to promote periodontal tissue healing in luxated teeth after traumatic dental injury. A statement regarding conflict of interest: The authors deny any conflict of interest.

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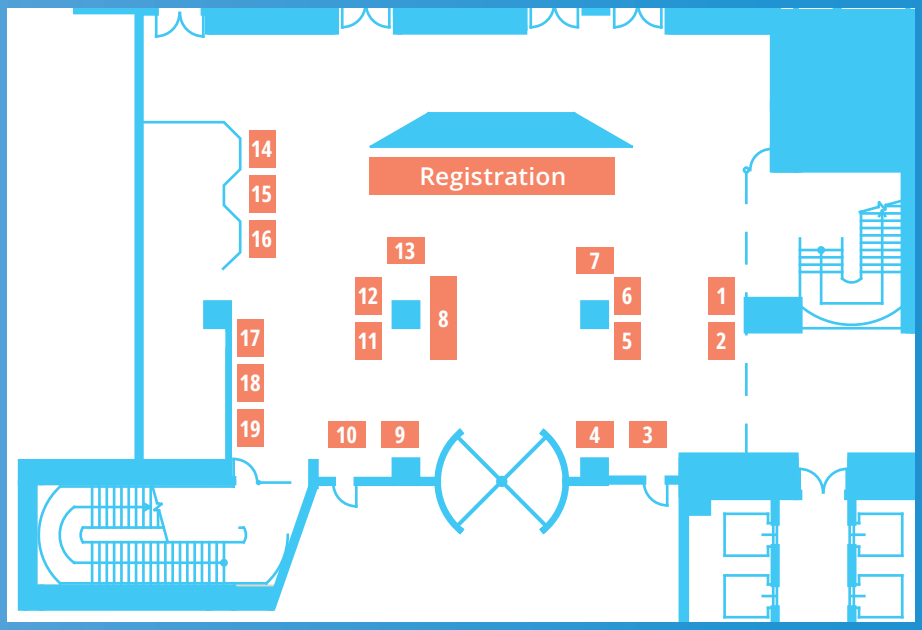

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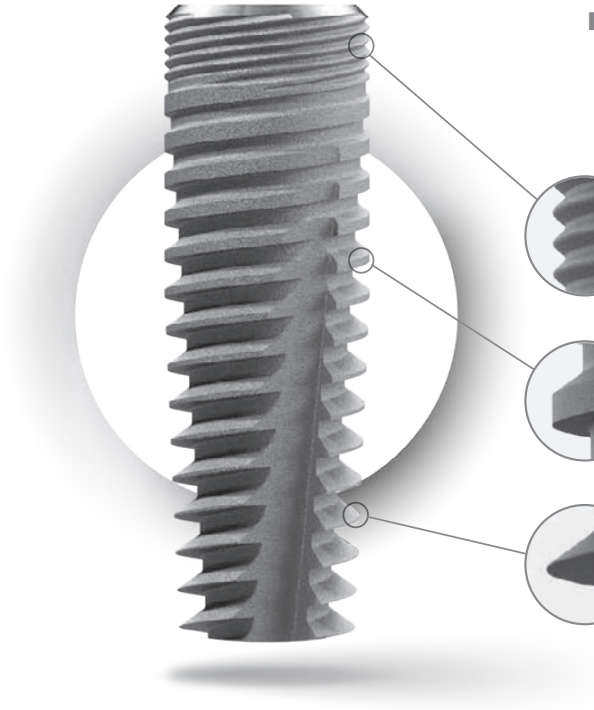

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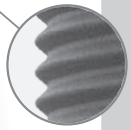

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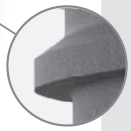

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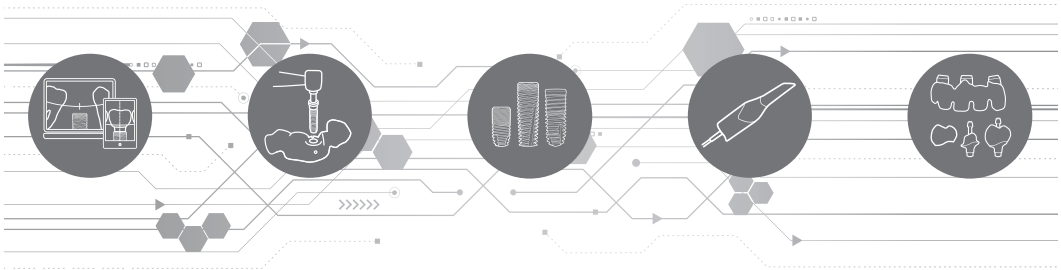

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