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Invited lectures

THE LIFE JOURNEY OF A PEDIATRIC DENTIST

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Pediatric dentistry is the most comprehensive branch of dentistry. Pediatric dentists are primarily focused on preserving the oral health of their patients, promoting oral health, and serving as educators both for children and their parents. From a practical standpoint, this branch of dentistry demands extensive knowledge of general dentistry and the ability to apply it in the unique context of a child's mouth—within confined spaces and often under the pressure of limited treatment time.

In addition to working across three different dentitions (primary, mixed, and permanent), pediatric dentists must have a deep understanding of age-specific pathology and the psychological development of their patients. From basic preventive interventions such as fissure sealing and fluoride application to complex treatments of dental trauma and prosthetic management of oligodontia, the pediatric dentist must be dedicated, committed, and passionate about their work.

This lecture will present the life journey of a pediatric dentist, highlighting the versatility, scope, and beauty of pediatric dentistry as an essential and foundational branch of dental science.

PAEDIATRIC DENTISTRY – A RETURN TO THE FUTURE

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The Croatian National Preventive Program aims to reduce dental caries among children through a comprehensive, multidisciplinary approach. Implemented in primary schools, the program targets first and sixth graders, involving school medicine, dental teams, kindergartens, and educational institutions. Key strategies include fluoride use, diet control, plaque management, fissure sealing, and education. A notable initiative is the "Dental Passport," introduced in 2016 to facilitate dental visits.

Supervised brushing with fluoride toothpaste (1450 ppm) is emphasized, recommended twice daily for three minutes, starting no later than age one. Children are advised not to rinse after brushing to maximize fluoride efficacy. The program has shown positive trends, with the KEP index for 12-year-olds decreasing from 3.21 in 2016 to 2.5 in 2022. In recognition of its efforts, Croatia received the FDI Smile Award in 2020 for promoting innovative and sustainable oral health prevention.

This initiative reflects a shift towards preventive care, aiming to improve children's oral health and reduce the prevalence of dental caries through early intervention and education.

Key words: Caries; Prevention; Fluorides; Inactivation

CAREER PATH OF A PEDIATRIC DENTIST

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Pediatric dentistry is more than a profession—it's a lifelong calling, focused on preparing and caring for young patients and/or their guardians, and on creating the conditions for high-quality oral health. The fundamental prerequisite is completion of an integrated university degree in Dental Medicine, at both undergraduate and graduate levels. Choosing a specialization is not an easy choice. It requires the dentist to be ready for demanding working conditions and to be familiar with various behavior-management techniques used to promote a child's cooperation, which greatly facilitates carrying out planned therapeutic procedures.

Alongside solid pedagogical knowledge, a pediatric dentist must possess excellent communication skills in order to establish good rapport with the child and build a respectful, equal relationship. The role encompasses all branches of dentistry, to a certain extent. Key areas of practice include monitoring and preventing caries, chemical and mechanical plaque control, treating early childhood caries and its consequences, performing complex endodontic treatments on young permanent teeth and post-endodontic restoration, dental traumatology, aesthetic restorative procedures, interceptive orthodontics, treatment under sedation or general anesthesia, among many others. Working with children demands considerable effort, patience, and understanding—especially in the case of children with special needs.

A person who chooses this path should, in addition to teamwork and professional communication skills with patients and their families, also possess empathy, a positive attitude toward lifelong learning, and, above all, a love for the profession. By caring for oral health, a pediatric dentist contributes to improving overall quality of health. This lecture will outline the development of a pediatric dentist from the beginning of dental education to the choice of specialization, along with the essential skills needed to successfully provide dental care.

Key words: Pediatric dentistry; Oral health; Dental care

BULK-FILL COMPOSITE – THE MATERIAL OF CHOICE IN PEDIATRIC DENTISTRY

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Since their introduction, composite materials have set the "gold standard" among restorative materials for the treatment of carious lesions. Their excellent aesthetic properties, ease of handling, and affordability have made them a very popular choice in modern dentistry. To simplify the application process, accelerate and improve polymerization, many dental material manufacturers have developed so-called bulk-fill composites. Due to their composition and properties, this type of composite is almost exclusively reserved for posterior tooth restorations. Their chemical formulation allows for significantly improved depth of cure compared to conventional composites, while maintaining similar polymerization shrinkage values. Bulk-fill composites come in various forms: flowable, conventional, capsule-based, and some are reinforced with glass fibers. Because they allow for the placement of thicker increments that can be optimally polymerized—greatly

reducing working time—bulk-fill composites have found their place in pediatric dentistry. In the posterior region of children's mouths, where dry field control and short intervention time are crucial, bulk-fill composites allow for efficient and rapid treatment. The aim of this lecture is to present the practical application and advantages of using bulk-fill composites in contemporary pediatric dentistry. The theoretical background of these materials will be discussed with reference to the latest scientific data regarding their properties. Indications and placement techniques will be demonstrated through a series of clinical case presentations.

Key words: Pediatric dentistry; Restorative materials; Bulk-fill composites

CARIES IN PRIMARY DENTITION – DIAGNOSIS, THERAPY, PROGNOSIS

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Dental caries in primary dentition presents a particularly demanding clinical challenge, encompassing its diagnosis, treatment, and prognosis. This complexity is further compounded by the young age of the patients, which hinders a comprehensive approach to resolving the issue. Consequently, a correct approach and implementation of all necessary measures and techniques for the diagnosis, therapy, and prognosis of caries in primary dentition are essential; without them, clinical resolution of this problem is unattainable. To this end, the use of all modern diagnostic methods, an appropriate psychological approach, the application of contemporary restorative dental materials, and adequate training of the therapist are indispensable. Only through a unified approach incorporating all these factors can complete remediation of caries in primary dentition be achieved, ensuring an accurate prognosis for all patients.

Key words: Children; Dental caries; Diagnosis

ARE WE FOLLOWING RECENT GUIDELINES FOR THE TREATMENT OF DEEP CARIOUS LESIONS IN PRIMARY TEETH?

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Caries in primary teeth is still extremely common in the child population of our country. Untreated carious lesions in primary teeth have numerous short-term and long-term consequences for the child's health. Treating (deep) carious lesions can be a very big challenge for various reasons. Before making a decision, several key elements must be taken into account: the child's problems/pain, the skill of the doctor, the materials used, and the cost of the procedure. Will we opt for a conventional approach? Will we choose minimal intervention procedures? What materials are applicable in our treatment procedures? Following a flow chart for the treatment protocol for carious lesions in primary dentition is a conditio sine qua non for achieving optimal results and a quality solution to the problems of the children whose parents bring and entrust them to us.

PREFABRICATED MYOFUNCTIONAL APPLIANCES IN GUIDING OCCLUSAL DEVELOPMENT IN PRIMARY AND MIXED DENTITION

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Guiding the development of occlusion in primary, mixed, and permanent dentition is an integral part of comprehensive care for the health of children and adolescents. The position of the tongue in the mouth, muscle tone, and thumb-sucking habits influence the formation of open bite and crowding anomalies. Myofunctional therapy primarily aims to eliminate harmful habits, correct the position of the tongue and lips, prevent the development of compression anomalies and open bite, and enable physiological tooth alignment and occlusal formation. In addition to "classic" fixed appliances, there are now increasingly popular prefabricated (ready-made) appliances, such as Myobrace and LM, which can successfully correct harmful habits, ensure proper tongue posture, and optimize the muscular activity of the cheeks and masticatory muscles. This helps prevent compression anomalies and promotes the development of proper occlusal relationships. The use of these appliances is simple and ensures a high success rate in guiding occlusal development. Conducted research confirms the efficacy of prefabricated (ready-made) appliances in addressing crowding anomalies.

Key words: Pediatric dentistry; Occlusion development; Mouth breathing

SPLINTING OF TRAUMATIZED TEETH – ANY NEW DEVELOPMENTS?

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Splinting teeth after trauma is essential to protect the periodontal ligament (PDL) and facilitate healing, but should be maintained only as long as necessary. For permanent teeth, splinting is recommended in cases of root fractures, extrusive and lateral luxation, and avulsion. The IADT guidelines advocate short-term, passive, flexible splints, as slight tooth mobility supports PDL and pulp healing. Commonly used materials include stainless-steel wire up to 0.4 mm or 0.13–0.25 mm nylon fishing line bonded with composite. A finite-element study showed that material quality, rather than how many teeth are splinted, determines flexibility. Splinting to one adjacent tooth per side is often sufficient, though including more teeth enhances security.

For primary (deciduous) teeth, splinting is indicated for root and alveolar fractures or lateral luxation, typically for around 4 weeks if instability persists after repositioning. The 2020 IADT guidelines now favor a conservative approach, reserving extraction as a last resort. Protocols for permanent teeth aren't directly transferable due to differences in child cooperation and risk to the developing permanent tooth germ. In vitro evidence suggests 0.2 mm stainless-steel wire offers near-physiological mobility, and splinting to one adjacent tooth per side is appropriate.

Conclusion: Use short-term, passive, flexible splints (e.g., nylon fishing line or thin plastic strips bonded with composite) in permanent teeth; for primary teeth, adopt a conservative splinting approach tailored to child-specific needs and growth, and always aim to minimize treatment impact.

Key words: Pediatric dentistry; Dental trauma; Splinting

INDICATIONS AND LIMITATIONS OF GLASS HYBRID MATERIALS FOR FILLINGS

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Glass ionomer material is the gold standard in caries treatment and control of caries activity. Newer highly viscous glass ionomer cements (HVGI) have improved mechanical properties and provide higher fluoride release.

Because of the numerous advantages of SIC in caries treatment, intensive work is being done to improve the properties of the material. This has been achieved in part by thermo-curing during the setting of material. The results of the studies conducted are presented, which show numerous advantages of thermo-curing. Modern technologies and numerous researches have led to the improvement of the composition of materials with innovative glass hybrid technology (GHGI). Hybrid glass materials are new, improved bioactive materials that builds up a much stronger matrix structure with excellent physical properties, wear resistance and fluoride release. Better mechanical properties extend the indications for use even in areas of higher stress and can serve as a good alternative to composite material.

Key words: Dental materials; Glass ionomer cement; Remineralization; Biocompatibility

CONSCIOUS SEDATION IN PAEDIATRIC DENTISTRY

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Given the importance of providing pain-free dental treatment for children, the need for the use of sedatives in clinical practice has increased. Paediatric dentists must be aware that sedation represents a continuum. The difference between conscious and deep sedation lies in the level of required monitoring as well as the responsibility of the dentist. There are three standard sedation techniques used in dentistry—inhalation, oral, and intravenous—which can be applied in the majority of patients. The selected technique must be applied carefully to ensure the most appropriate approach to reducing a patient's anxiety. The only modern procedure recommended for inhalation sedation is the titrated administration of nitrous oxide with oxygen. Nitrous oxide sedation has become a standard procedure in contemporary dental medicine for both children and adults. In most European countries and in the United States, it is an essential technique used by dental practitioners in their daily work.

Historical data show that this procedure was introduced into practice by dentists and has been used safely for over a century and a half.

Key words: Conscious sedation; Paediatric dentistry; Nitrous oxide

THE CHILD AS A PATIENT – COOPERATION IS POSSIBLE!

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Patients of pediatric age who are unable to cooperate with their primary dental care provider—most commonly due to pronounced odontophobia, but also for various other reasons—are referred to the Department of Pediatric Dentistry at the Clinic of Dental Medicine, University Hospital Centre Rijeka. The department's staff are specially trained in advanced behavior management techniques, which in the majority of cases enable them to overcome the underlying causes of non-cooperation and successfully perform the necessary dental procedures. In cases where such approaches are unsuccessful, treatment is carried out under general anesthesia. This lecture will present the distinctive clinical practices of this unit, encompassing behavior management methods as well as procedures performed under general anesthesia.

NATIONAL PREVENTIVE PROGRAM – IS IT WORTH IT?

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Croatia's National Preventive Program aims to reduce the dmft index and consistently motivate parents and students to visit a dental professional. This multidisciplinary program targets children in the first and sixth grades of primary school, involving school medicine and dental medicine teams. A "Dental Passport" pilot project was initiated in 2016 to support this program. Key prevention strategies include mechanical and chemical control of dental plaque, the use of fluorides, diet control, fissure and pit sealing, and education. Supervised brushing with fluoride toothpaste (1450 ppm fluoride) is considered the most valuable preventive procedure, recommended twice daily for three minutes, starting no later than one year of age. Children should not rinse after brushing to maximise fluoride efficacy. The program has shown positive trends, with the KEP index for 12-year-olds decreasing from 3.21 in 2016 to 2.5 in 2022. For its efforts in promoting innovative oral health prevention, Croatia received the FDI Smile Award 2020.

WHY IS THE VISIT TO THE DENTIST FOR CHILDREN WITH DENTAL TRAUMA DELAYED?

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Traumatic dental injuries (TDIs) are a prevalent concern among children and adolescents, impacting up to 25% of schoolchildren and 33% of adults, often before age 19. Severe cases can lead to tooth loss and significant long-term consequences. Their treatment is often lengthy and costly, contributing to patients discontinuing care.
A retrospective study in Zagreb, Croatia, found boys had a higher prevalence (59%). Luxation is common in primary dentition, while crown fractures are prevalent in permanent teeth. A critical issue is delayed treatment, negatively affecting prognosis. This delay stems from factors such as lack of parental awareness, belief that primary teeth injuries are less severe, inadequate dentist training, and limited access to out-of-hours dental services.
Key words: Pediatric dentistry; Dental trauma; Primary dentition

Poster presentations

AESTHETIC REHABILITATION OF TEETH WITH A DIAGNOSIS OF AMELOGENESIS IMPERFECTA WITH DIRECT COMPOSITE VENEERS: CASE REPORT

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Objective: Amelogenesis imperfecta is a synonym for a group of hereditary anomalies that manifest in the oral cavity as generalized enamel defects affecting all or almost all primary and permanent teeth. The aim of this case is to demonstrate the aesthetic rehabilitation of the teeth of a 12-year-old girl diagnosed with amelogenesis imperfecta with direct composite veneers.
Materials and procedures: The material used in this work was 3M Filtek Supreme A1 and A2 liquid composites, 3M ESPE Filtek UD solid composite, 3M Filtek A1 solid composite, 3M Scotchbond Universal adhesive. A total of 8 teeth in the upper jaw were restored with composite veneers.
Case report: A 12-year-old female patient accompanied by her mother came to the Department of Pediatric and Preventive Dentistry of KBC Zagreb because of the changes on her teeth. A clinical examination showed that the changes correspond to the diagnosis of amelogenesis imperfecta, and that autosomal dominant pitted hypoplastic type. From the family history, we learnt that the mother also had AI. The patient was referred for an orthopantomogram. Considering the age, the planned fixed orthodontic therapy and the patient's desire for a quick aesthetic solution, it was decided to restore the teeth directly with composite veneers.
Conclusion: This case report shows the successful aesthetic rehabilitation of a teeth diagnosed with amelogenesis imperfecta with direct composite veneers. Such a quick and financially acceptable solution made it possible to improve the appearance of the teeth and increase the self-confidence of the patient, taking into account her age and the need for a quick aesthetic solution before orthodontic therapy. This approach can serve as a guide for similar cases in the future.
Key words: Amelogenesis imperfecta; Direct composite veneers; Aesthetic rehabilitation

ANALYSIS OF MORPHOLOGY IN DENTAL ROOTH MANDIBLE (LOWER JAW) BASED ON CONE BEAM COMPUTED TOMOGRAPHY (CBCT) SCANS

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Objective: The objective of this research is to study the variation in number of roots of lower teeth and to compare them with data from available literature.
Materials and methods: The research was conducted at The Department of Maxillo-facial surgery in the University Hospital of Split by analysing CBCT scans of patients' lower jaws. Out of 145 CBCT scans of lower jaws, 114 were valid and entered in Microsoft Excel Office 2019 for statistical analysis.
Statistical processing: Data collected from 114 participants, i.e. CBCT scans, were analysed in STATISTICA 11.0 programme package and every side of a group of teeth was analysed separately.
Results: Lower incisors are single-rooted teeth in 99,5 % of cases, while two roots are found in 0,5 % of teeth. Furthermore, lower canines are single-rooted teeth in 96,9 % of cases, while the other 3,1 % of teeth have two roots. Lower premolars with two roots are found in 6,2 % of cases, and the other 93,8 % of teeth have one root. Regarding the number of roots of the lower molars, the majority have two (88,3 %), 3,6 % one, and 8,1 % three roots.
Conclusion: This research has confirmed that the obtained data of the number of dental roots in all lower jaw teeth is in accordance with the data in literature. Lower incisors, canines and premolars are, in the largest percentage, single-rooted teeth, whereas molars are, the most, two-rooted teeth and the most common type of variation is a supernumerary root in the lower third molar.
Key words: Mandible; Teeth; Cone beam computed tomography

TEMPORARY DENTAL RECONSTRUCTION PROCEDURE FOLLOWING THE LOSS OF AN UPPER CENTRAL INCISOR IN A PATIENT WITH LEUKEMIA – A CASE REPORT

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Objective: To achieve an aesthetically satisfactory solution for a patient whose quality of life was impaired following the loss of an upper right central incisor.
Subjects and procedures: A 15-year-old boy came to the Department of Paediatric and Preventive Dentistry, Clinical Hospital Center Zagreb, for treatment of a horizontal root fracture of the upper right central incisor resulting from trauma. After consultation with an orthodontist and a pediatric hematologist due to his primary condition (leukemia), the patient's upper right central incisor was indicated for extraction. A temporary procedure was chosen to close the space, using a modelled tooth attached to the adjacent teeth with composite fibers while awaiting stabilization of the patient's primary condition. First, we took an alginate impression of the upper and lower jaw. Next, the form of the upper right central incisor was indirectly modelled using composite materials (Admira Fusion

5, Voco, Germany) and plastic modelling caps. Using the direct method, we repaired an uncomplicated crown fracture of the upper left central incisor with the same composite materials (Admira Fusion 5, Voco, Germany). The modelled tooth was then attached to the adjacent teeth with composite fibers (everStick C&B, GC) in a dry working field, and the occlusion was adjusted.
Conclusion: It is possible to achieve temporary satisfied aesthetics in a patient following the loss of an upper right central incisor while awaiting potential orthodontic or implantoprosthetic therapy.
Key words: Dental trauma; Tooth loss; Composite fibers.

EMERGENCY CARE AND TREATMENT OF COMPLICATED TRAUMA OF THE UPPER CENTRAL INCISORS - CASE REPORT

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Objectives: Dental trauma affects about 30% of children with permanent dentition, often with incomplete root growth. Immediate treatment of a tooth injury and proper selection of the treatment procedure is a prerequisite for a good prognosis of the injured tooth. Fractures of the crown of the front teeth are a painful experience for the child due to the resulting physical deformation and the psychological impact imposed on them.
Materials and methods: A 10-year-old girl comes to the Department of Pediatric and Preventive Dentistry the next morning after a tooth injury. During a game at school in the evening, she fell and injured the hard and soft tissues in her oral cavity. A clinical examination and X-ray analysis revealed a complicated fracture of the crown of tooth 11 and a cervical fracture of the root of tooth 21. In addition, both teeth had 3rd degree mobility. Clinically, lacerations of the upper and lower lips with surrounding hematomas were visible, and laceration of the gingiva interdentally between the upper incisors was present. During the first visit, the dental pulp was extracted on both central incisors and splinted with a wire-composite splint. In the following follow-up visits and after removal of the splint, the endodontic treatment of teeth 11 and 21 was completed. Tooth 11 was replaced with a direct composite build-up, and tooth 21 was fitted with an intracanal post and a composite crown.
Results: Nine months after the accident and the treatment, there are no subjective symptoms, the radiological images are normal, and the patient is satisfied with the aesthetics of the restorative and prosthetic treatment.
Conclusion: Complicated and demanding trauma and a dramatic clinical picture for both the parents and the child with well-thought-out and appropriate treatment methods is possible to adequately rehabilitate and satisfy aesthetic and functional requirements.
Keywords: Dental trauma; Upper central incisors; Conventional endodontic treatment; Composite crown

HAVE LIFESTYLE HABITS AND PSYCHOLOGICAL WELL-BEING CHANGED AMONG ADOLESCENTS AND MEDICAL STUDENTS DUE TO COVID-19 LOCKDOWN IN CROATIA?

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Introduction: This study explores dietary habits, sleep patterns, and psychological well-being among adolescents and medical students during the COVID-19 lockdown in Split, Croatia.
Adolescence and early adulthood are critical periods for establishing lifelong habits, underscoring the importance of understanding how lifestyle factors impact health, especially during periods of disruption such as the COVID-19 pandemic (1). Dietary habits, physical activity, sleep patterns, and psychological well-being significantly influence overall health, including oral health. Obesity and poor nutrition are well-established risk factors for numerous health issues, including dental caries, which remains one of the most common preventable chronic diseases worldwide (2).
Materials and methods: A total of 1326 students surveyed in 2018 and 2019 were compared to 531 students surveyed in May 2020. The anonymous questionnaire was self-administered in a paper-and-pencil form during 2018 and 2019, while in 2020 this was switched to an online data collection approach for safety issues. Psychological well-being indicators—perceived stress, quality of life (QoL), happiness, anxiety, and optimism—were analyzed using general linear modelling.
Results: Results revealed no major differences in overall Mediterranean diet (MD) adherence between the pre-lockdown and lockdown periods. However, adherence to specific MD pyramid components shifted, with increased consumption of fruits, legumes, fish, and sweets, and decreased intake of cereals, nuts, and dairy. One-third of students reported weight loss during lockdown, 19% reported weight gain, and physical activity levels remained largely unchanged. Sleep quality significantly improved, with 31.5% of students reporting feeling refreshed after sleep during lockdown compared to 8.5% pre-lockdown, alongside a median increase of 1.5 hours in sleep duration.
Lockdown significantly impacted QoL, happiness, optimism (all $p < 0.001$), and perceived stress ($p = 0.005$). During lockdown, greater MD adherence was linked to reduced perceived hardship, higher happiness, and improved QoL.
Conclusion: These findings emphasize the importance of promoting healthy lifestyle habits, including MD adherence, especially during periods of crisis (3). Additionally, this research sheds light on behaviors that impact oral health, such as dietary patterns, offering broader applications for preventive health interventions (4). Lifestyle medicine approaches should be prioritized to enhance the well-being of young populations.
Keywords: Lifestyle; Sleep; Psychological stress; Adolescent health; COVID-19.

CASE REPORT: AESTHETIC RESTORATION OF A PERMANENT INCISOR AFFECTED BY MIH

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Introduction: Molar-incisor hypomineralization (MIH) is increasingly common in children, affecting permanent and sometimes primary dentition as a defect in enamel quality. It is characterized by changes in enamel colour, increased sensitivity, and pain, which can significantly impact patients' quality of life.
Case Report: A 12-year-old female patient presented at the Department of Pediatric and Preventive Dentistry, University Hospital Center Zagreb, complaining about the appearance of her teeth and sensitivity in the upper incisors. Clinical examination revealed hypomineralization affecting the permanent incisors, molars, premolars, and primary molars. A minimally invasive restorative procedure without tooth preparation was chosen for the restoration of tooth 21.
Materials and Methods: The tooth was cleaned using an ultrasonic device, polished, and the enamel treated with 37% orthophosphoric acid. After rinsing and drying, an adhesive system was applied and polymerized using LED light. A flowable composite was applied to the labial surface in layers, each individually polymerized, to achieve a natural appearance. Final shaping and polishing were performed with diamond burs, polishing rubbers, and discs, resulting in a smooth and shiny surface.
Conclusion: Restoration of anterior teeth in MIH patients improves aesthetics, reduces sensitivity, and preserves tooth function. Using aesthetic composite materials allows a minimally invasive approach, ideal for children. The development of bioactive materials that promote enamel regeneration provides additional options for MIH treatment, ensuring the long-term durability of restored teeth.
Keywords: Incisors; Restoration; MIH

PARENTAL AWARENESS OF MICROPLASTIC USAGE AND OF ITS IMPACT ON THE DEVELOPMENT OF PERMANENT TEETH

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Introduction: We are daily exposed to microplastics, which can have toxic effects on children's health and the development of permanent teeth. The aim of this study was to investigate the frequency of plastic use, awareness of its harmful effects, and analyse the impact of microplastics on the development of permanent teeth, particularly in the context of molar-incisor hypomineralization.
Materials and Methods: The study group consisted of 101 parents of preschool-aged children. All participants completed a questionnaire with 45 questions. The collected data were analysed using chi- square test.

Results: The results showed that children most frequently come into contact with plastic through food intake, particularly beverages (97.03%), while the use of plastic straws was rare (9.9%). Although parents were generally well-informed about microplastics (87.12%), their awareness of molar-incisor hypomineralization was significantly lower (8.9%). Additionally, a significant association was found between parental education level and their awareness of bisphenol A, endocrine disruptors, and molar-incisor hypomineralization ($p<0.05$).
Conclusion: The conclusion of this study highlights the widespread use of plastic in daily life and the low level of awareness among parents about its harmful effects on children's health. There is a need to develop educational campaigns aimed at increasing awareness of microplastics and their potential risks, particularly in preschools, to better inform parents and prevent the negative impact on children's development.
Keywords: Enamel; Hypomineralization; Microplastics

CARIES PREVALENCE IN 6- AND 12-YEAR-OLD CHILDREN IN CROATIA

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Background: Dental caries is the most common disease of the oral cavity, which especially occurs in children. Knowledge about the occurrence and development of caries is important for understanding the prevention of caries, placing emphasis on preventive, non-invasive procedures that include regular check-ups in order to preserve the healthy teeth. The purpose of this paper is to show the caries prevalence in 6- and 12-year-old children in the period from 2016 to 2023 in Croatia.
Materials and methods: The data were collected during examinations of 6- and 12-year-old children in dental practices that had contracts with the Croatian Health Insurance Institute, and were recorded through the Central Health Information System (CEZIH). Data are presented using standard epidemiological indicators for primary and permanent dentition; DMFT, dft indices and % of caries free children.
Results: During the eight-year period, a trend of decreasing caries incidence (DMFT) was observed, especially among twelve-year-old children, from 3.21 (2016) to 2.91 (2019) and 2.43 (2023). The mean value (SD) of total DMFT index was 2.82±0.25. 29.82% of 6-year-old children are caries free, while the decrease in the incidence of caries is progressing more slowly compared to twelve-year-old children, from 3.69 (2016) to 3.77 (2019) and 3.37 (2023). The mean value (SD) of total dft index was 3.65±0.15.
Conclusion: Although, the decline in caries prevalence was observed among schoolchildren, a large proportion of preschool children with caries experience was recorded (70.48%), which indicates the need to strengthen the promotion of oral health and to raise the level of awareness from an early age in order to prevent dental caries and to improve children's oral health.
Key words: Caries; Prevention; Oral health

FEA ANALYSIS OF AN IMMATURE MAXILLARY INCISOR RESTORED WITH 4 DIFFERENT POST SYSTEMS

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Introduction: Biomechanical analysis after post-endodontic treatment is crucial for understanding the high failure rate of immature maxillary central incisors (IMCI) under occlusal loading.
Materials and methods: A CBCT scan was used to reconstruct a personalised IMCI finite element analysis model. 137 intraoral periapical radiographs of school-aged children were used to reconstruct 5 stages of root development: 1/2 root development (S1), 3/4 (S2), more than 3/4 (S3), fully developed root with open apex (S4) and fully developed root with closed apex (S5). 4 different post systems were tested: RelyX Post 3M ESPE (PS1); GC Fibre Post (PS2); EverStick Post GC (PS3); Metal Post Unimetric 1.0 Dentsply (PS4). A static load of 100N was applied to the palatal surface of the tooth at an angle of 45 degrees and the equivalent stresses were measured according to the Henckey von Mises (HMH) strength theory.
Results: The mean HMH stress values were statistically significantly higher at the cervical level for all models at the S3, S4, and S5 stages and at the S2 stage for the PS2, PS3, PCO, and NCO models. The HMH stress values were significantly higher at the apical level for all models in the S1 stage and for the PS1 and PS4 models in the S2 stage.
Conclusion: Post-endodontic restoration with intracanal retention did not reduce the development of stresses within the root dentin.
Keywords: Maxillary central incisor; Dental trauma; Post-endodontic restoration; Intracanal retention; Finite element method