

# Poster Presentations

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## **1. Shear Bond Strength (sbs) of Composite to Glass Ionomer Cement after Etching and Bonding**

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**Introduction:** Indirect pulp capping (IPC)- removal of infected dentin and leaving the affected dentin in order to prevent pulp exposure. The base at the bottom of the cavity should be able to remineralize the affected dentin and preserve pulp vitality. Glass Ionomer cement can be used as base and composite material on top for aesthetic final restoration, what is called sandwich restoration.

**Aim:** To analyze the effect of etching on glass ionomer cement and the shear bond strength (SBS) between composite and glass ionomer cement after conventional etching and bonding.

**Results:** Etching of Glass ionomer cement dissolved the silica particles and performed micro-pores in the glass ionomer cement. The mean SBS was 12.2 Mpa (Min 7.5, Max 16.7) and SD 2.8.

**Discussion:** Shear bond strength (SBS) of composite materials to enamel after total etch procedure and bonding ranged between 14-19Mpa. The results of this study showed that composite material can be bonded to glass ionomer cement after conventional etching and bonding.

## **2. Primary Molars with Enamel Defects in Cleft Lip and/or Palate Patients: A Multicentre Evaluation**

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**Introduction:** Cleft lip and/or palate (CLP) is associated with several dental anomalies, including enamel defects such as hypoplasia or hypomineralisation. The majority of the literature on enamel defects in this cohort is centred around primary incisors and permanent incisors/molars - there is little research on enamel defects in primary molars. Here we report the results of a multicentre evaluation on enamel defects in the primary molars of CLP patients in England and Wales.

**Aims:** To establish the prevalence of enamel defects in the primary molars of patients with CLP in England and Wales, find possible associations and determine the dental management of these teeth.

**Methods:** The dmft (decayed, missing or filled teeth) audit records of 5-year-olds born in 2012/2013 that attended the cleft units in Liverpool (n=104), Manchester (n=128), South Wales (Swansea, n=97), London (Evelina, n=82) and Cambridge (n= 68, 2012 only) were reviewed. Patients with at least one primary molar with an enamel defect were included. The clinical notes, photographs and radiographs of included patients were then examined.

**Results:** Of the 461 CLP patients with 5-year-old audit data available, 12% (n=54) had evidence of enamel defects in at least one primary molar. Cleft palate (41%) and unilateral cleft lip and palate (35%) were the most common cleft types associated with enamel defects in primary molars. 13% of cases (n=7) were associated with cardiac co-morbidities and 13% of cases were syndromic (n=7). 23% of affected primary molars were also carious. The most common management for caries-free affected molars was prevention alone (55%) and the most common management for carious affected molars was composite restorations (31%).

**Conclusions:** There may be a higher prevalence of enamel defects in the primary molars of children with CLP. Conducting a national/international prospective study may allow for further exploration of this hypothesis in the future.

### **3. The Prevalence of Molar Incisor Hypomineralization in Abu Dhabi City, UAE: A Cross Sectional Study**

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**Introduction:** Molar Incisor Hypomineralization (MIH) is systemic origin of one to four permanent molars frequently associated with affected incisors observed in the first year following tooth eruption. Etiology is multifactorial and the conditions have significant clinical implications. Their understanding is crucial to global dentistry for developing appropriate preventive and therapeutic interventions. Despite numerous worldwide studies, there is lack of data regarding MIH prevalence in distinct regions of the United Arab Emirates (UAE). This study, conducted in Abu Dhabi aims to address this gap, focuses on differing socio demographics within the UAE.

**Method:** A cross-sectional study was conducted on 408 schoolchildren from Abu Dhabi, Al Ain, and Al Gharbia. The children were divided into two age groups, Grade 1 (approximately 6 years old) and Grade 5 (approximately 10 years old). Dental examinations were conducted and recorded using a standardized survey form. Data was collected regarding sound teeth, teeth affected by MIH, the presence of demarcated opacities, post-eruptive enamel breakdown, atypical restoration, and tooth extraction due to MIH. The overall severity of each condition was also evaluated and documented.

**Results:** The total MIH prevalence in the Emirate of Abu Dhabi was found to be 37.01%, with Al Ain showing the highest proportion of affected individuals at 13.24%. Females had a slightly higher MIH prevalence than males. MIH was found to be more prevalent in 10-year-olds than in 6-year-olds. Tooth-specific analysis indicated teeth numbers 16 and 36 as having the highest instances of MIH, suggesting localized vulnerability. Demarcated opacities were noted to be the most common condition associated with MIH.

**Conclusion:** Our study provides comprehensive insight into the prevalence and severity of MIH in Abu Dhabi with varied socio-economic backgrounds. Emphasis has been laid on the necessity for region-specific preventive measures and effective management strategies for these conditions.

### **4. Effectiveness of Icon Resin Infiltration for Developmental Enamel Defects and Molar-Incisor Hypomineralization (MIH)**

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**Background/Aim:** Molar-incisor hypomineralization (MIH) specifically affects approximately 13.5% of the global population, impacting not only the structural integrity and aesthetics of teeth but also significantly reducing the quality of life. This study aims to evaluate the effectiveness of Icon resin infiltration for treating MIH and other related developmental defects of enamel (DDE), focusing on improving both the aesthetic appearance and durability of affected teeth.

**Materials and Methods:** The study investigates the effectiveness of Icon resin infiltration in treating four cases of DDE, including one case of MIH, supplemented by microabrasion and bleaching. The procedure began with a thorough cleaning using microabrasion and air abrasion to prepare the surface, followed by resin infiltration. Restoration of enamel loss due to abrasion was performed with a composite. The results were assessed using transillumination.

**Results:** In the study, all four cases showed significant aesthetic improvement post-treatment. The MIH-affected tooth displayed substantial masking of visual imperfections through Icon resin infiltration, with white spots nearly disappearing, although the results were not as pronounced as those seen in other DDE. Transillumination confirmed a marked reduction in enamel porosity post-infiltration. In terms of durability, none of the treated teeth exhibited signs of color regression or enamel breakdown during the follow-up period. The additional treatments of microabrasion and bleaching further enhanced the overall aesthetic outcomes and patient satisfaction.

**Conclusion:** The integration of bleaching, microabrasion, and Icon resin infiltration treatment has proven to be highly effective in managing profound enamel lesions. This micro-invasive approach not only enhances clinical outcomes but also significantly boosts patient health and self-esteem, demonstrating its value in dental practice.

## 5. Hypersensitivity Reduction with an SPR-G Light-Cured Varnish in a Hypomineralized Tooth: A Case Report

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**Background:** The sensitivity of teeth with molar incisor hypomineralization (MIH) can affect children's quality of life and is a challenging problem for dentists.

New remineralizing technologies such as S-PRG varnish appear to reduce the sensitivity of teeth with MIH. This clinical case describes the use of a light cured varnish in a 6-year-old girl with sensitivity in the lower-left central incisor.

**Objective:** This clinical case aims to show the Pain reduction effect of an S-PRG varnish in a MIH affected patient.

**Methods:** A 6-year-old female patient presented to the clinic reporting dental sensitivity on tooth 31. This pain was evaluated with the facial expression scale (FES) reporting a degree of pain as 6 (unbearable) for which a relative isolation was carried out to apply the product: Barrier Coat S-PRG varnish (SHOFU inc.). A base was previously mixed with the activator and is applied with a brush on the surfaces of the affected tooth, the varnish was light cured for 10 seconds on each side of the tooth, instructions are given not to consume foods with pigments and to maintain good oral hygiene free of added sugars. The patient returns after 6 months for a check-up and the dental sensitivity was assessed with the FES rated as 1 (no pain). A dental prophylaxis was performed with S-PRG paste and subsequent placement of a new layer of S-PRG barrier coat.

**Results:** The use of the S-PRG light-cured varnish was effective in reducing tooth sensitivity after 6 months of control.

**Conclusion:** S-PRG technology can be considered as a treatment option for teeth with sensitivity due to HMI.

## 6. Caries Experience in Children with Molar–Incisor Hypomineralisation in Fujairah, United Arab Emirates and its Association with Hypomineralised Teeth Number

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**Background:** Molar–incisor hypomineralisation (MIH) has been found associated with an increase in dental caries. Studies utilizing the recent MIH diagnosis and calibration criteria recommended by the EAPD in 2021 are very scarce. Additionally, the available data in literature about the relationship between the hypomineralised teeth number (HTN) and caries come from only one study.

**Aim:** To assess the relationship between MIH and caries experience among children in the city of Fujairah, UAE, utilizing the recent criteria recommended by the European Academy of Paediatric Dentistry (EAPD) in 2021, and to assess the relationship between the number of teeth affected with MIH, and dental caries.

**Methods:** One hundred and sixty-two children were included in this cross-sectional study, aged 7–9 years old. Children were examined for MIH according to Ghanim et al. (Eur Arch Paediatr Dent 16:235–246, 2015. 10.1007/s40368-015-0178-8) criteria and Ghanim et al. (Eur Arch Paediatr Dent 18:225–242. 10.1007/s40368-017-0293-92017) training manual. Caries experience was assessed with decayed, missing, filled (dmft, DMFT) scoring system.

**Results:** dmft mean was 6.56 (SD Å} 3.78) and DMFT mean was 0.91 (SD Å} 1.23). Children with MIH had significantly higher dmft ( $p = 0.003$ ) scores. Children with higher HTN had significantly higher dmft ( $p = 0.008$ ) scores.

**Conclusion:** Children in Fujairah have extremely high caries scores. Children with MIH have more decayed, missing and filled teeth. Hypomineralised teeth number was positively associated with caries experience.

## **7. Demarcated, Hypomineralized Enamel Opacities Depend on Overexpressed Ameloblastin**

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Demarcated enamel opacities are developmental defects linked to molar-incisor hypomineralization (MIH) with a robust prevalence in children. Etiologic factors include environmental and epigenetic factors, however, the pathophysiology is not clear. Understanding of the pathways is complicated as ameloblasts undergo apoptosis and are lost during tooth eruption. The retention of enamel proteins has been implicated in MIH. The goal of the study was to analyze enamel in the presence of the overexpression of the enamel protein ameloblastin (Ambn) in mice.

**Methods:** Transgenic Ambn was overexpressed in mice from the amelogenin promoter encoding full-length Ambn. Ambn was overexpressed in separate mouse lines at four increasing concentrations and analyzed by Western Blot, mCT, histology and immunostaining.

**Results:** Mice overexpressing Ambn displayed opaque enamel at low concentration and demarcated lesions at high concentrations of reduced mineral content. At low Ambn concentration, enamel opacities started close to the dentino-enamel junction (DEJ) in the inner enamel and contained 17-kDa Ambn cleavage products. At high Ambn concentration, opacities were demarcated and Ambn species of 17 kDa and higher were found. Ameloblasts demonstrated prolonged secretory and transition stages, thin basement membrane and shortened maturation stages. When opacities expanded to the enamel surface adjacent ameloblasts were detached and formed cysts within the enamel organ.

**Conclusion:** The overexpression of Ambn in murine secretory ameloblasts results in enamel hypomineralization with opaque or sharply demarcated boundaries, phenotypically similar to MIH.

## **10. Dissolution of MIH Affected Enamel**

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**Background/Aim:** Early gross destruction of coronal tooth tissue is common in severe MIH cases, however, whether this relates to mechanical processes such as post-eruptive breakdown, biochemical processes such as rapid carious lesion development, or a combination is debatable. Increased carbonated apatite and protein concentrations in MIH-affected enamel may modulate demineralisation behaviors. The aim was to compare acid dissolution rates of MIH-affected, carious lesion-affected and unaffected human enamel.

**Method:** Tooth sections were covered with acid-resistant liquid latex to expose 2.5mm<sup>2</sup> windows of visually sound enamel, carious lesions, or MIH lesions. Nine groups of four samples each were tested based on enamel status and any MIH pre-treatment, which could be surface layer removal or sodium hypochlorite irrigation or both. Samples were immersed individually in pH4.0 buffered acetic acid solution with a calcium ion-selective electrode and the rate of Ca<sup>2+</sup> increase in the solution was measured over a period of one hour.

**Results:** Higher Ca<sup>2+</sup> concentrations were registered for all MIH groups compared to sound enamel and carious lesions, and groups pre-treated with sodium hypochlorite all registered higher final concentrations. There were no statistically significant differences in Ca<sup>2+</sup> when compared at a group level. When groups were consolidated into visually sound, MIH lesions without sodium hypochlorite treatment, and MIH lesions with sodium hypochlorite treatment supersets, there was significantly higher Ca<sup>2+</sup> concentration for the sodium hypochlorite set (p0.05).

**Conclusion:** The increased protein content of MIH affected enamel may inhibit acid dissolution, and by reducing this, the mineral phase may be more susceptible to demineralisation than non-MIH affected enamel.

## 11. Teeth with Molar Incisor Hypomineralisation have Lower Pulp Oxygen Saturation Values

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Molar Incisor Hypomineralisation (MIH) teeth exhibit a susceptibility to dental hypersensitivity and caries, likely attributed to enamel porosity. The pulpal condition of MIH-affected teeth is of paramount concern. Pulpal oximetry stands out as a reliable and non-invasive method for evaluating pulpal status. Consequently, this study aims to assess and compare pulpal oxygen saturation levels (SaO<sub>2</sub>) in varying degrees of MIH-affected teeth in comparison with unaffected control teeth. Additionally, the research seeks to explore potential correlations between these parameters.

**Methods:** The study encompassed 116 permanent first molars from 29 children aged 7 to 11 years, representing both genders. The sample was categorized into the Control Group (48 healthy teeth) and the MIH Group, further divided into Mild MIH (30 teeth with white or yellow demarcated opacities) and Severe MIH Group (38 teeth with post-eruptive enamel fractures, atypical restorations, or atypical caries lesions up to medium depth). Pulp oximetry testing was conducted twice: initially 30 seconds after the device was affixed to the tooth, and subsequently 30 seconds after the first reading. The average of these measurements considered. Data analysis employed the Kruskal-Wallis test and Spearman's correlation test, with a significance level of 5%.

**Results:** Oxygen saturation levels (SaO<sub>2</sub>) in the Control Group (CG) remained constant at 98%. In the MIH Group, SaO<sub>2</sub> levels exhibited variations corresponding to the severity of hypomineralization: mild (79%) and severe (68%). The analysis of mean oxygen saturation between the studied groups revealed significant differences (p<0.01). Spearman's correlation test demonstrated a noteworthy correlation (p = 0.001), with an r value of -0.822.

**Conclusion:** This investigation establishes that children with MIH manifest altered oxygen saturation values, with lower levels observed in cases of severe MIH.

## 12. Impact of Molar Incisor Hypomineralization on Oral Health-Related Quality of Life in a Group of Turkish Children

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**Background/Aim:** Molar Incisor Hypomineralization (MIH) can cause rapid development of caries, failures of the restorations, sensitivity and aesthetic problems which may also negatively affect the daily lives of individuals. The present study assessed whether MIH impacts the oral health-related quality of life (OHRQoL) in children and adolescents in comparison to age-matched controls without MIH.

**Materials and Methods:** The cross-sectional survey included 175 participants (95 MIH and 80 non-MIH), aged 8-15 years, from the patients who attended Department of Pediatrics, University of Marmara, Turkey from December 2018-December 2019. MIH was diagnosed using the criteria of the European Academy of Paediatric Dentistry. Clinical dental examinations of the children included the assessment of dental caries experience with DMFT index and oral hygiene status by Simplified Oral Hygiene Index (OHI-S). Subjective perceptions regarding their own oral and dental health of children were assessed using the Turkish version of the Child Oral Health Impact Profile Short Form (COHIP-SF19) and Facial Image Scale (FIS). Statistical analysis was performed, and results were considered significant if the p-value was less than 0.05.

**Results:** When the DMF-T scores were analyzed for both groups, children with MIH had notably higher DMF-T and df-t scores (p=0.006 and p=0.0001, respectively). OHI-S scores of children with MIH were significantly higher than those without MIH (p=0.034). FIS scores were higher for children's satisfaction with their appearance and oral health related to oral cavity at non-MIH group compared to MIH group.

( $p=0,02$  ve  $p=0,0001$ , respectively) Children with MIH had lower overall, oral health well-being and social emotional well-being sub-dimensions scores.

**Conclusion:** Children with MIH experienced a greater negative impact on their OHRQoL compared to children without MIH.

### 13. The Difference in Failure-Rate of SSCs in the Primary Dentition Based on the Indication Caries and HSPM

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**Background and aim:** Stainless steel crowns (SSCs) are commonly used in pediatric dental clinics, both in cases with caries and HSPM. The aim of this study was to investigate possible differences in failure rate between SSCs placed on carious molars or HSPM.

**Method:** Data were collected from the dental records in three dental referral practices, located in Almelo, Amsterdam and Nijverdal, The Netherlands. In total 789 crowns were placed in 262 children. All children were treated between February 2019 and February 2024. In the dental records the date of treatment, the reason for placement of the SSC (caries or HSPM), the technique used, the date of failure (if applicable) and/or the date of the last visit were noted. Statistical analysis was carried out by using Excel® (Microsoft Office 2021).

**Results:** There were 5 different dental professionals who placed SSCs in these practices, but most SSCs (95,9%) were placed by the two pediatric dentists working in these practices. 353 SSCs were placed on first primary molars of which 51 were lost to follow up and 436 SSCs on second primary molar of which 93 were lost to follow up. In the group of SSCs on the second primary molars, 22 SSCs were placed on HSPM (8 lost to follow up), 35 on HSPM with caries (7 lost to follow up) and the rest on carious primary molars. The failure rates were 4,97% for first primary molars and 4,66% for second primary molars. In the group of HSPM and the group of HSPM with caries the failure rate was 0%.

**Conclusion:** The failure rate of SSCs on the first primary molar is higher than in the second primary molar. The failure rate in the HSPM and HSPM with caries group is lower than in the caries only group.

### 14. Three-Year Follow-Up of Different Treatment Methods and Materials for MIH-Affected Molar Teeth in Children

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**Aim:** Treatment of teeth with MIH is complex and difficult. Although there are various treatment options, there is no consensus on the most effective treatment method. The aim of our study is to determine the most effective procedure by comparing the materials and methods used in the treatment of MIH.

**Method:** 235 first molars with MIH were restored with 5 different materials/methods. Equia Forte HT (GC, Tokyo, Japan) was used in Group 1; In Group 2, G-eanial composite (GC, Tokyo, Japan) was used with a Fuji IX (GC, Tokyo, Japan) base; In Group 3 and Group 4, EverX Posterior (GC, Tokyo, Japan) base and G-eanial composite (GC, Tokyo, Japan); In Group 5, G-enial composite (GC, Tokyo, Japan) were used. In group 4, deproteinization was performed with Papacarie Duo gel (F&A, Sao Paulo, Brazil). The clinical success of restorations at three/six/nine month periods was evaluated using Modified USPHS criteria.

**Results:** At the end of the 3-year follow-up, a total of 126 teeth were able to be evaluated. Four of the restorations (three in Group 1 and one in Group 2) were assessed as unsuccessful due to loss of retention, however this finding was not statistically significant. Marginal adaptation showed a statistically significant difference ( $p 0.05$ ) between Group 2 and Group 4. Surface roughness showed a statistically significant difference ( $p 0.05$ ) between Group 1 and Group 5.

**Conclusion:** Although no statistically significant difference was observed in restoration survival, the composite groups tended to perform better than the glass ionomer groups. Papacarie deproteinization showed similar success with other composite groups.

### **15. Prevalence of MIH and DMH, and its Relationship with Systemic Condition in Israeli Child**

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**Introduction:** MIH is defined as a spectrum of qualitative demarcated developmental enamel opacities affecting the first permanent molars with or without involvement of the permanent incisors (1,2). In the primary dentition, terms as "Deciduous Molar Hypomineralization"(DMH) (3) or "Hypomineralized Second Primary Molars"(HSPM) (4), have been used to describe hypmineralization defects that affects one to four second primary molars. The prevalence rates vary from 2.4 to 40.2%. The aim of this study was to assess the prevalence and the risk factors of MIH and DMH in children in israel.

**Materials and methods:** 1209 patients ranging in age from 2 to 12 years who were seeking dental care at the Pediatric Clinic, Faculty of Dental Medicine, Tel- Aviv University Israel were examined from December 2018 till December 2019 (1 year).

MIH was evaluated using criteria based on the 2003 European Academy of Pediatric Dentistry guidelines (EAPD; demarcated opacity, post-eruptive enamel breakdown, atypical restoration, extraction due to MIH) (2). Children were diagnosed with MIH when at least one permanent first molar was affected, with or without the involvement of the incisors. All the surfaces of the permanent first molar and the central incisor were examined for defined opacity.

Children were diagnosed with DMH based on the criteria used by Elfrink et al. when at least one second primary molar was affected (5).

**Results:** The overall prevalence of MIH in this study was 10.3% and 5.9% for DMH. Our findings were not able to support the presumption that being Jewish or Arabic Israeli is a risk determinant of MIH or DMH. No association is found in our study between MIH and histories of birth prematurity, birth complications, low birth weight. Using drugs during pregnancy was found to be correlated with DMH and MIH (p =0.04).

**Conclusion:** There are many events that can cause MIH, prospective studies with large sample size are needed to determine how various etiological factors can affect the etiological role.

### **16. Use of Table-Top (Heres®) as a Guide for Post-pulp Treatment Restoration in Partially Erupted Teeth with Molar-Incisor Hypomineralization (MIH): Case Report**

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**Introduction:** Molar Incisor Hypomineralization (MIH) is defined as a qualitative enamel defect with a high prevalence with a negative impact on the oral health of affected children. The etiology cannot be defined yet, but it is described as multifactorial including environmental factors, diseases related to the mother, neonatal or postnatal conditions, and respiratory diseases. The restoration of the organs affected with MIH is a clinical challenge due to the poor adhesion in the hypomineralized tooth structure, in addition to that, the partial eruption hinders correct isolation, which is why alternatives are required in the restoration of molars with MIH.

**Objective:** The objective of this work is to use the Table-Top (Heres®) as a guide for post-pulp treatment restoration in partially erupted teeth.

**Material and Methods:** Female patients, 8-year-old twins came to the clinic. The clinical examination shows the presence of HMI in partially erupted MIH TN1, MIH TN2, MIH TN4 in first permanent molars. In both patients, the lower molars underwent pulp treatments with MTA, Biodentine and glass ionomer, which were subsequently reconstructed with Table Top as a long-term provisional restoration guide with thermoplasticized body resin. In the upper molars, it was decided to use a high viscosity ionomer.

**Results:** The molars were rehabilitated with the use of Table-Tops as a long-term provisional restoration guide, with thermoplasticized body resin.

**Conclusions:** Table-top placement is a treatment alternative to restore partially erupted molars with hypomineralization due to its easy manipulation and adaptation.

## **17. Incisor Molar Hypomineralization and its Association with Complications in Twin Pregnancy:**

### **Case Report**

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**Introduction:** Complications during pregnancy in prenatal, perinatal and postnatal stages such as respiratory infections, urinary tract infections, use of antibiotics, fever, premature birth, twin pregnancy are considered risk factors for developing enamel development defects such as Molar Incisor Hypomineralization (MIH). Objective: To describe the association that exists between MIH and complications in a twin pregnancy.

**Materials and Methods:** 8-year-old monozygotic twins came to the Specialty in Pediatric Dentistry at the University of Guadalajara with the query "I want my daughters' cavities sealed." During the clinical examination, the MIH-TN1 lesion pattern was observed. MIH-TN2, MIH-TN4 were observed in first molars and permanent incisors. In the anamnesis, the mother reports that during the prenatal period she presented urinary infections, respiratory tract diseases (pulmonary thrombosis) that required administration of antibiotic therapy (nitrofurantoin) and anticoagulants (heparin); In addition, their bilirubin levels increased in the last weeks of pregnancy. In the postnatal period, the twins presented vitamin D deficiency and respiratory problems, administering antibiotics (amoxicillin with clavulanic acid). Dental treatment for permanent molars consisted of pulp therapies with MTA and Biodentine®, as well as composite restorations and use of silver diamine fluoride (SDF).

**Results:** The patients presented a relationship with the risk factors for MIH. However, despite being monozygous twins, the severity of the lesions is different.

**Conclusion:** The anamnesis and clinical examination are an essential tool to detect etiological factors of MIH, inferring a relationship between complications in the prenatal and postnatal periods and their development.

## **18. Relationship between Deciduous Molar Hypomineralization and Molar-Incisor Hypomineralization**

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**Introduction:** DMH is a variant of MIH, which are defined as defects in enamel quality in primary dentition, mainly in deciduous molars and canines. The etiology in MIH, is idiopathic; however, it has been shown that environmental and genetic factors can directly interfere with the quality of the organic matrix of enamel. Studies report a predisposition to present MIH in patients with DMH. The most affected teeth in primary dentition are the second primary molars, and in permanent dentition, the first molars.

**Objective:** To determine the relationship between the presence of DMH as a predictive factor for the subsequent appearance of MIH.

**Materials and Methods:** A 6-year-old female patient with a history of sensitivity and pain in deciduous second molars with the presence of a fistula in dental organ OD 6.5, the patient had a previous rehabilitation treatment with resin, and presence of DMH, which is also found in OD 5.5, in addition, partial eruption is present in the lower right first molar 4.6, whose mesial pit is affected by MIH lesions and sensitivity.

**Results:** The presence of hypomineralization in deciduous molars predicts anomalies in permanent dentition, coinciding with the clinical findings in the mixed dentition of the patient.

**Conclusions:** Early diagnosis of DMH serves as an indicator of MIH and helps to early diagnosis, which will help maintain permanent dentition in the best possible condition.



## **19. Indirect Restorations for the Management of Deciduous Molar Hypomineralization MDH using Digital Processes, a Conservative approach: Case Report**

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**Introduction:** Hypomineralization in deciduous molars is defined as a qualitative enamel defect in primary dentition, mainly in second molars and deciduous canines. It is of multifactorial origin, it has been shown that environmental and genetic factors can interfere with the quality of the organic matrix of the enamel. Restoration in dental organs affected with MDH is a clinical challenge due to the poor adhesion to hypomineralized dental tissue, which is why alternatives are required such as 3D digitization using CAD/CAM, optimizing work time and with greater precision. Objective: To perform an aesthetic and functional rehabilitation in a 4-year-old pediatric patient who presents MDH and dental hypersensitivity through digital processes.

**Material and Methods:** A 4-year-old female patient with a history of hypersensitivity and pain when chewing in the second molars is presented. deciduous with previous treatment with glass ionomer and presence of MDH in OD 5.5, 6.5, 7.5, 8.5; in addition to OD 6.3. Intraoral digital scanning was performed for the printing of digital models, performing digital engraving, subsequently preparation for the crown was made in the patient's mouth and the indirect resin crown restorations previously milled in CAD-CAM were cemented with thermo-activated resin, in direct composite resin was placed on OD 6.3.

**Results:** Rehabilitation with indirect resin crown restorations using digital processes was an effective treatment.

**Conclusions:** The use of the intraoral scanner and the printing of models provides a more precise treatment, returning aesthetics and functionality to the teeth affected by MDH in the long term, contributing to the improvement of their quality of life.

## **20. Therapy E (MIH-TNI) with Semi-Direct Composite of Hypomineralized Molars: Description of the Technique**

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Therapy E (MIH-TNI) involves using direct, indirect, and semi-direct composite to treat hypomineralized molars. The technique we describe aims to address the challenge of restoring hypomineralization in a way that preserves the tooth's structure. It involves restoring the tooth's anatomy and function without causing significant loss of tooth structure.

We describe the semi-direct technique with warmed composite step by step with an example case. This technique allows for restoring anatomy and function. We must be very careful to maintain the dental axes and cover the entire molar's surface if necessary, adhering to all the surrounding enamel. The procedure involves the following steps:

1. Recording necessary data such as intraoral and panoramic x-rays, impressions or scans, and pictures.
2. Lab preparation of the model, waxing, and making transparent silicone keys.
3. 3. In-office treatment, including preparation and cleaning of molars, relative isolation, warmed stamped composite, and polymerization.
4. Occlusion adjustment and polishing.

The result of our technique is a restoration that offers several benefits. It's easy to polish, minimally recovers the vertical dimension, and provides long-term stability. This stability reassures the clinician and the patient, as the restoration can be easily repaired or polished if necessary.

## 21. Multiscale Analysis of Ribbon-like Disordered Zone in Hypomineralized Secondary Primary Molars (HSPM)

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**Background:** New ribbon-like hypomineralized structures with white and brown colors were found in primary enamels and there is a clear similarity to MIH and HSPM formations with sharp edges.

**Methods:** Multiscale investigation of the ribbon-like developmental disorder was performed from millimeter to nanometer scale. Microstructure of the disordered area was observed in longitudinal and transversal cross sections using Scanning Electron Microscopy. The 3D extent, porosity and density of the structure were examined with Micro-Computed Tomography. Mineral phase, carbonate and organic content and degree of crystallinity were measured using Micro-Raman Spectroscopy. For the nanometre scale resolution study of the porosity and the mineral phase electron transparent lamellae were prepared with focused ion beam (FIB) milling and investigated by High-Resolution Transmission Electron Microscopy. Energy-dispersive X-ray spectrometry was used to measure chemical composition along the cross sections at micrometer scale and around the pores on the nanometre scale.

**Results:** The disordered ribbon-like structure is less wear-resistant due to the elevated organic material content and the reduced volume of mineral phase. The mineral density of the disordered structure is similar to the dentin. The crystalline phase is mainly hydroxylapatite with minor Mg, Cl and F content as substituents. The organic content is higher in the brown than in the white or creamy region. The FWHM of the  $\nu_1(\text{PO}_4)$  band at 960  $\text{cm}^{-1}$  of the disordered area shows ~14% less value than that of healthy enamel which means the carbonate content is slightly or occasionally remarkably less in the altered zone. TEM-EDS also indicates close to stoichiometric composition of hydroxylapatite without significant carbonate substitution.

**Conclusion:** The unique appearance and the unusually reduced carbonate content distinguishes it from the typical HSPM and MIH enamel which means there might be a difference in its mineralization and formation mechanism.

## 22. Comparative Evaluation of SDF versus UBA in Reducing Dental Hypersensitivity in MIH-Affected Permanent Posterior Teeth. A Field Randomized Controlled Trial

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**Background:** Dental hypersensitivity (DH) is prevalent in those with Molar Incisor Hypoplasia (MIH), marked by subjective experiences influenced by various factors. DH ranges from sporadic sensitivity to severe pain, limiting masticatory function and causing aversion to specific foods and oral hygiene practices, accelerating dental caries progression. Early intervention is crucial. The correlation between MIH severity and sensitivity remains insufficiently substantiated.

Numerous therapeutic materials in clinical settings yield variable outcomes, with a universally effective treatment regimen elusive. Many MIH-affected dentitions go untreated due to limited awareness, especially in India and other developing countries which have low dental treatment equity. Community-based screening in educational institutions offers a twofold advantage: it provides collective treatment at mass level and next it addresses the concept of early intervention as MIH is manifested early and its population presenting in schools. Agent utilization in community settings varies from clinical and thus prompted an investigation into two innovative techniques' /materials' efficacy.

**Aim:** Assess and compare reduction potentials of Silver Diamine Fluoride (SDF) and Universal Bonding Agent (UBA) in MIH-affected teeth with Dental Hypersensitivity.

**Methodology:** MIH screening, following EAPD guidelines, identified children with DH using the Schiff scale was performed. Permuted Block Randomization assigned teeth to SDF or UBA groups. A triple-

blinded protocol preceded treatment, with standardized procedures. Parameters were gauged at 1, 3, 6, 9, and 12 months to discern DH reductions.

**Results:** Per-protocol analysis upheld methodological rigour, using the Wilcoxon signed-rank test for intra- and inter-group differences. The Mann-Whitney test appraised statistical significance between the two agents.

**Conclusions:** SDF and UBA showed favorable results at the 12-month mark. The presentation will outline the subtle benefits of each agent and preferences in diverse clinical scenarios.

### **23. Immediate Effect of Glass Ionomer Application in Reducing Hypersensitivity in MIH- Molars in School Children**

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**Objective:** This prospective interventional study aimed to clinically investigate the efficiency of (GIC) glass ionomer cement application (Ionostar Plus + Easy Glaze, VOCO GmbH, Germany) in reducing hypersensitivity in permanent molars affected by molar incisor hypomineralisation when assessed immediately (15 minutes) after its application.

**Materials and Methods:** Children with at least one hypersensitive MIH-affected permanent molar (MIH-TNI-3 or 4) were recruited from regular and new patients of the Department of Preventive and Paediatric Dentistry of Greifswald University (NCT05945381). The pre-treatment status was evaluated and only included if they did not receive a tooth-specific in-office desensitizing treatment within one month. The teeth were sealed by four trained operators with a combination of GIC and protective coat (Ionostar Plus + Easy Glaze, VOCO GmbH, Germany). Clinical pain assessments were performed by 4 calibrated dentists using the Schiff Score Air Sensitivity Scale (SCASS). Wong-Baker Faces Scale (WBFS) was used to assess the subjective level of hypersensitivity from the child at baseline (“pre”) and 15 minutes post application.

**Results:** This study involved 25 participants (14 males and 11 females; mean age  $8.6 \pm 1.85$  years) with 43 hypersensitive MIH-molars of which about half were SCASS 3 (n=24, 55.8%) and SCASS 2 (n=19, 44.2%). Regarding hypersensitivity, the reported mean SCASS score reduced significantly from 2.56 ( $\pm 0.50$ ; Range=2-3) at baseline to 1.14 ( $\pm 0.96$ ; Range=0-3) after 15 min of GIC sealant application (P0.001, Paired t test). Similarly, reported WBFS scores also significantly reduced from 5.81 ( $\pm 2.50$ ; Range=2-10) at baseline to 2.88 ( $\pm 2.31$ ; Range=0-10), respectively (P0.001, Paired t test). The mean reduction in SCASS scores was 1.3 ( $\pm 0.6$ ) and 1.4 ( $\pm 1.0$ ) for baseline SCASS 2 vs. 3, respectively.

**Conclusion:** GIC coverage is effective in providing instant relief from hypersensitivity in MIH molars in schoolchildren.