

Oral Presentations

Presented on 15 November, 2024

Hypersensitivity in Teeth with Molar-Incisor Hypomineralization (MIH) and Its Relationship with Severity of Defects, Caries, and Restoration Status: A Preliminary Study

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Background/Aim: Hypersensitivity and an increased risk of caries may be experienced in teeth with molar-incisor hypomineralization (MIH). This study aimed to evaluate the hypersensitivity and caries prevalence in teeth affected with MIH and to determine the relationship between tooth hypersensitivity and MIH score, defect size, dental caries, restoration status, and tooth type.

Method: Children aged 6 to 15 years of age with MIH in at least one tooth were included. The diagnosis and scoring of MIH were determined according to the European Academy of Paediatric Dentistry (EAPD) criteria. The caries lesions were assessed using the International Caries Detection and Assessment System (ICDAS II). The defect type, extent, and severity of MIH, restoration status, and treatment need were recorded. The intensity of hypersensitivity was measured with cold air using the Schiff Cold Air Sensitivity Scale (SCASS) by the dentist and visual analogue scale (VAS) by the patient. Statistical analyses were performed with Shapiro-Wilks, Chi-Square, and Fisher-Freeman Halton tests.

Results: While 79.8% of teeth with MIH had a mild VAS score, 70.1% had a Schiff code of 0. MIH-affected teeth with white or creamy demarcated opacities had lower VAS values, whereas teeth with atypical caries were more likely to have severe VAS values. It was observed that severe VAS scores in MIH-affected teeth with caries were significantly higher than mild and moderate scores ($p < 0.01$). The incidence of caries in those with Schiff code 0 was lower than in other Schiff codes. No statistically significant difference was found between restoration conditions in terms of VAS and SCHIFF scores ($p < 0.05$).

Conclusion: Most of the teeth with MIH showed mild hypersensitivity. Severe caries was observed in most of the caries teeth with MIH. The presence of caries in these teeth resulted in high hypersensitivity. Additionally, the restoration status in these teeth did not affect hypersensitivity.

Molar-Incisor Hypomineralization Impact on Dental Fear and Oral Health-Related Quality of Life in Swedish Children: A Multicenter Prospective Randomized Controlled Trial

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Molar-Incisor Hypomineralization (MIH) impacts physical and psychological well-being. This study aimed to assess dental fear and anxiety (DFA), oral health-related quality of life (OHRQoL), and self-perception of oral aesthetics in patients who underwent restorative treatment or extraction of their first permanent molars (FPM) due to severe MIH.

In Sweden, a multicentre trial conducted a prospective clinical randomized control study of restorative treatment or extraction of severely MIH-affected FPMs. Patients aged 6-9 years completed questionnaires (CFSS-DS for DFA and CPQ11-14 for OHRQoL) before treatment. At age 11 years study patients were examined, matched by healthy controls, and all answered questionnaires on DFA, OHRQoL, and oral aesthetics. Statistical analyses used Chi-squared tests, independent T-tests, and paired sample T-tests, with a 5% significance level.

This study involved 105 patients and 177 controls. No variations in DFA or OHRQoL were observed among study patients receiving different treatments for MIH-affected FPMs. Those with affected upper incisors had diminished oral aesthetic perception. At 11 years, study patients displayed similar dental DFA but lower OHRQoL, compared to controls.

Extracting or restoring severely MIH-affected FPMs does not negatively affect DFA and OHRQoL in the young patient. However, patients with opacities in upper incisors expressed aesthetic concerns.

CAD/CAM Hybrid Composite Resin Overlays in the Treatment of 9-year-old Child with Molar-Incisor Hypomineralization: A Case Report

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Aim: The aim of this case report was to evaluate the clinical performance of two first permanent molars affected by Molar–Incisor Hypomineralization(MIH) restored with computer-aided design and computer aided manufacturing (CAD/CAM) technology.

Method: A 9-year-old patient presented to Marmara University, Dental School, Department of Pediatric Dentistry, with complaints of pain during chewing and tooth sensitivity to cold drinks. The #36, #46 teeth exhibited atypical cavities and broadly demarcated brown opacities associated with open dentin, featuring active carious lesions diagnosed as "4c" according to the MIH-TNI. The pulp tissue of tooth #36 was exposed during caries removal and direct pulp capping was performed with NeoMTA2. Immediate dentin sealing (OptiBond FL) was applied to both teeth. The teeth were restored with overlays (VOCO Grandio blocs) fabricated using computer-aided design and computer-aided manufacturing (CAD/CAM) technology. The internal surfaces of the overlays fabricated from a hybrid composite resin block, were airborne-particle abraded and silanated. Tooth preparations were etched with phosphoric acid before cementation. Both restorations were luted with dual-curing universal composite-based luting system (VOCO Bifix QM). The teeth were evaluated according to the modified United States Public Health Service (USPHS) criteria.

Results: At the 6-month follow-up assessment, both MIH- affected molars restored with CAD/CAM overlays using hybrid composite were clinically satisfactory, demonstrating sustained retention with the complete elimination of hypersensitivity. Marginal integrity and anatomical form unchanged throughout the observational period. Color stability and marginal integrity were maintained over 6 months follow-up.

Conclusion: This case report suggests that CAD/CAM restorations can be a promising treatment option for permanent first molars effected by MIH, utilizing the bond strength of adhesive resins and reducing chair time in a single session and restore the chewing function. However, clinical trials of longer duration are required for further validation.

Comparative Evaluation of SDF versus UBA in Reducing Dental Caries in Cariously Affected (ICDAS 1-4) MIH Permanent Molar Teeth: A Field Randomized Controlled Trial

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Introduction: Various strategies have been employed to address the adverse effects of Molar Incisor Hypoplasia (MIH). In India or other regions with low-medium socioeconomic status, limited awareness among children and parents has led to the unintended endurance of MIH consequences. The availability of treatment infrastructure in these regions is also scanty. Implementing school-level screening and intervention aimed to curtail the widespread impact of this condition will be helpful. In clinical settings, composite materials have demonstrated efficacy in restoring MIH-affected teeth, but their use in mass-scale or school-based initiatives is hindered by intricate setup requirements (isolation/preparation/bonding). This prompted an investigation into the use of novel composite material (self-etch, self-bond, and self-cure) within school settings. Another contemporary material, Silver Diamine Fluoride (SDF), has shown effectiveness in preventing caries in primary teeth, but its impact on MIH is not known. Also, its discoloration hinders patient acceptance.

Aim: The aim was to assess and compare caries-arresting potentials of Silver Diamine Fluoride (SDF) and Universal Bonding Agent (UBA) in MIH-affected teeth with International Caries Detection and Assessment System (ICDAS) scores of 1 to 4.

Methodology: MIH screening was performed in schools following EAPD guidelines and identified children for caries intervention were categorized based on ICDAS scale. Permuted Block Randomization assigned teeth to either the SDF or UBA group. Triple blinding preceded treatment administration, and treatment ensued utilizing standard operative procedures. Evaluation was performed at 1,3,6,9, and 12 months for caries arrest/progression.

Results: The analysis was done as per-protocol analysis. Inferential statistical model was used to check intra- & inter-group significances.

Conclusions: Both SDF and UBA demonstrated promising outcomes at the 12-month mark. The presentation shall detail nuanced advantages of each agent, along with a discussion on agent preference in diverse clinical scenarios.

Correlation Between Molar-Incisor Hypomineralization, Stress and Family Functioning

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Background: Etiology of MIH is unclear. Numerous studies found correlations with multiple factors but with weak and contradicting evidence. Stress has never been studied in correlation with the defect. This study aims to assess the relationship between stress, family functioning and MIH.

Methods: One hundred sixty-two children between the ages of 7 to 9 years old were included in this retrospective study. Oral examinations were performed on the children to detect MIH, and questionnaires regarding stress and family functioning were administered to their parents. Statistical analysis was performed using the Mann-Whitney U test and Independent Samples T-test.

Results: Statistically significant correlation between stress and MIH was found; children with higher stress scores had higher occurrences of MIH. On the contrary, family functioning quality was not found to have a direct correlation to MIH.

Conclusions: Stress is correlated to MIH and is potentially one of the risk factors that contribute to the development of the defect.

MIH Tooth Sealing and Protection: A New Engineered Solution

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Background: Hypomineralized teeth are being considered an emergent burden at world level. So far, hypomineralized teeth restorative procedures remain a huge challenge for the dental area, mainly for children.

Aim: This study presents a new crown that has the potential to be a substantial step ahead for hypomineralized teeth treatment and protection. Firstly, it can be placed without any ‘hard’ intervention such as drilling or anaesthesia being then a friendly and soft restorative procedure. Secondly, it provides improved solutions for sensitivity having the potential to fully seal the enamel and dentinal tubules, thus avoiding disturbances in fluid-filled dentinal tubules due to thermal, chemical, mechanical, evaporative, or osmotic external stimuli. Thirdly and finally, the new crown, specifically designed for the purpose, provides protection against tooth structural degradation avoiding high stresses in tooth through engineered stress relaxation and dampening of normal chewing loads, reducing stresses in tooth in about 90%.

Conclusion: This study will provide in vitro evidence of previous restorative ‘friendly’ procedure and sensitivity protection and will also provide in-silico evidence of the ability of the crowns to preserve structural deteriorated tooth, by reducing tooth stresses in about 90%, while reestablishing teeth mechanical function.

A Family Approach to Hypomineralization with the Technological Touch of the Twenties

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Background: Hypomineralization is reported more frequently than ever amongst paediatric dentists around the world. How do we align the lifestyles, diets, attitudes and parenting of the 2020's and meet the dental challenges faced by these families in a practical way? This presentation will introduce a family-based approach to diet, oral hygiene and prevention protocols, which are essential to children with hypomineralized teeth. The focus will be on the utilization of technology to assist in the delivery of information to families. While also using digital dentistry to provide superior outcomes through efficient, child friendly, minimally invasive treatment protocols. Aims: To build confidence in the identification of modern-day risk factors for children with hypomineralized teeth. To facilitate the effective delivery of and the successful prevention and treatment protocols for these paediatric patients.

Objectives:

- Be able identify lifestyles, diets, attitudes and parenting of the 2020's
- Be able to tailor prevention programmes to suit the 2020's diets, lifestyles and parenting attitudes
- Be aware of the benefits of a family based approach and how to implement it
- Be aware of the applications of technology and social media to aid delivery of oral health messages relevant to hypomineralization
- Be aware of the applications of digital dentistry in the paediatric realm

Oral Presentation

Presented on 16 November, 2024

Indirect and Semi Indirect Restorations for Severe MIH Affected Permanent Molar

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Background: Severe affected MIH permanent molar it is one of the most common affections of MIH and this can be a difficult scenario for the most of pediatric dentists around the world since we were not trained to solve this kind of cases. Rehabilitation in these severe cases requires accurate diagnostic, knowledge about different rehabilitation options and of course treating the MIH in a minimally invasive way without affecting the bonding procedures.

Aim: The aim of this lecture is to present different alternatives for severe MIH affected permanent molars and improve aesthetics, quality of life and longevity of the restorations performed so we present indirect and semi-indirect rehabilitation cases with a good prognosis and easy techniques for the pediatric dentist.

Results and Conclusions: Semi indirect and indirect restorations for severe MIH affected permanent molar are a very suitable choice for restoration with great longevity and good prognosis, we encourage to pediatric dentist community to improve our aesthetic techniques and improve our patient's quality of life.