Oral Presentations

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Dental Local Anaesthesia Revisited

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Background: Clinical dental situations with patients receiving several infiltrations and/or additional nerve blocks are not uncommon. The latter anaesthesia techniques do not always provide 100% anaesthesia and none of amide anaesthetics appear 100% efficient, either. Nevertheless, the same amides are used in medicine without issues. Therefore, one should question if success isn't related to the technique of administration of local anaesthetic.
Aim: The aim of this study is to investigate the neuro-anatomy of the dentomaxillofacial complex to explain failure of dental local anaesthesia.
Method: This is a critical assessment of anatomy of head and neck with regard to dental innervation, based on PubMed publications and study books, published between 2015-2020.
Results: Innervation of the dentomaxillofacial complex appears more complicated than taught at dental school. The superior and inferior alveolar nerves are not the only nerves responsible for innervation of teeth. Therefore, traditional dental local anaesthesia in the maxilla can fail in patients with thicker cortical bone for instance. Moreover, numerous publications on anatomy have shown aberrant anatomical patterns of neurovascular bundles (e.g. accessory canals in the mandible, and the pattern of the canalis sinuosis) which explain why some patients do not respond to conventional infiltration and/or nerve block anaesthesia. The solution probably lies with intraosseous injections as this technique can overcome all issues of anaesthetizing the nerve that innervates a particular tooth.
Conclusion: Despite the fact that several publications in the past 5 years on neuro-anatomy and teeth have shown a wide range of anatomical variations, no study has really focused on solving the issue of failing local anaesthesia. Due to lack of firm evidence, one can assume that intraosseous anaesthesia is the solution to overcome anatomical variations in dental innervation.

Molar Incisor Hypomineralization Diagnosis and Conservative Treatment in 8 Years Child: A Case Report

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Background: It is a well-known fact that the proportion of young patients with molar incisor hypomineralization has been growing exponentially these days. Hence, minimally invasive early-onset management should be implemented to avert more severe future intervention.
Method: An 8-year-old girl attended the private dental practice in Moscow, Russia, with compromised first permanent molars and complaints of teeth sensitivity. Her medical history was comprised of prolonged pharmacotherapy against numerous cases of illnesses with fever and convulsions, and several attendances to paediatric dentists. The child had a deformed aesthetic appearance due to mottled incisors. Thorough examination identified multiple enamel defects known as moderate molar incisor hypomineralization. The restoration stage included the implementation of direct resin-based restorative material in three first permanent molars (Estelite, Tokuyama), root treatment due to extensive periapical lesions, and stainless-steel crown in the fourth first molar (3M) to reconstruct the tooth morphology. APF gel 1,23% was applied to prevent the potential carious lesions. The patient was comprehensively instructed to prevent the progress of oral pathology. The patient was followed up every 3 months.
Results: The following 1,5 years of check-ups demonstrated an excellent outcome, presenting great longevity and no need for further intervention. The periapical process in tooth 46 has vanished. It proved wrong the flawed approach of previous dentists wishing to extract one of the first permanent molars and to extirpate and place crowns on other ones. Much more conservative management presented high longevity in teeth with minor structural defects. The girl and her parents were satisfied with functional and aesthetic results.
Conclusions: The early-onset diagnosis and minimally invasive treatment of molar incisor hypomineralization should be an essential target for paediatric dentists.

Deep Examination of Hypomineralized Enamel: Differences and Similarities Between Two Environmental Pathologies

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Human hypomineralizations resulting from early childhood disease, environmental pollutants or drugs are a public health problem. These defects can also provide an archival record of temporal and environmental changes. The aim of this presentation will be to show the differences and similarities at the ultrastructural and atomic scales between the two main hypomineralizations of enamel: dental fluorosis (DF) and MIH, which are often a source of misdiagnosis.
Enamel was deeply analyzed using a battery of accurate techniques, from digital tooth color survey by spectrophotometer to nuclear and elementary measurements at atomic scale (PIXE, PIGE, ICP-OES/-MS, APT), through nanomechanical properties, crystallographic pattern (micro-XRD), HR-SEM and vibrational spectroscopy techniques (FTIR and Raman).
Color parameters (L*,a*,b*) of teeth revealed specificities to DF and MIH with notably DF brown spots being the darkest of all exhibiting an orange hue, and MIH brown lesions being more yellow (higher b) than DF ones. Mechanical properties tests showed an important difference of enamel behavior depending on the depth considered. Quantification of trace metals and determination of chemical bonds were accomplished and revealed very interesting and unexpected results.
Comparisons of MIH and DF yielded both similarities and differences in tissue heterogeneity and highlighted chemical, structural and mechanical specificities behind each pathology. Distinction between enamel surface and the body of the lesion in term of atomic composition and structure is important to take into account.

Structural Changes in Enamel Affected by Molar-Incisor Hypomineralization: A Meta-Analysis of Invitro Studies

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Objectives: The aim of this systematic review was to assess structural changes in enamel affected by molar-incisor hypomineralization (MIH) by conducting a systematic review of in vitro and/or ex vivo studies.
Materials and methods: A systematic search was performed in PubMed, Cochrane Library, Scopus, Embase, BVS, and Web of Science databases. All studies that assessed structural changes in MIH-affected teeth were included. Two examiners extracted qualitative and quantitative data and evaluated the risk of bias. Quantitative data were subjected to a meta-analysis in order to estimate standardized mean differences (SMD), using a random model and a 5% significance level.
Results: Out of 2,223 studies, 25 were included. Quantitative data on Vickers microhardness, mineral density (MD), concentrations of calcium, carbon, phosphorus, and oxygen, and calcium to carbon and calcium to phosphorus ratios of MIH-affected enamel were compared with those of sound enamel. MIH-affected enamel showed a significantly lower SMD for microhardness (p 0.00001), for the MD of cream, yellow, and brown opacities (p = 0.04; p 0.00001; p 0.00001, respectively), and for the concentrations of calcium (p = 0.01) and phosphorus (p = 0.007) when compared with sound enamel. Quality of evidence was very low for all outcomes.
Conclusion: MIH-affected enamel demonstrates lower microhardness, MD, and concentrations of calcium and phosphorus than sound enamel. Thus, MIH-affected enamel has important physicochemical and mechanical changes that may heighten the risk of enamel fracture and hinder restorative treatment as well.

Impact of Molar Incisor Hypomineralization (MIH) on Oral Health-Related Quality of Life in the West Mediterranean Region of Turkey

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Aim: To assess the impact of MIH on OHRQoL in schoolchildren with MIH in the West Mediterranean region of Turkey.
Methods: This study was conducted with a group of 50 children aged 8-15 years presenting MIH from patients referred to Akdeniz University Faculty of Dentistry, Department of Pediatric Dentistry. The translated form of Child Oral Health Impact Profile- Short Form 19 (COHIP SF-19) was used to evaluate OHRQoL. MIH was diagnosed according to the European Academy of Paediatric Dentistry (EAPD) criteria. Demographic and socioeconomic data (DSE) were obtained from the children`s parents/caregivers using a structured questionnaire.
Results: The mean COHIP-SF19 score was 57 ± 8.7. There was no significant difference between age-gender and COHIP-SF19 scores of children. There was a significant difference between the number of teeth with MIH and COHIP-SF19 total, COHIP-SF19 Oral health subscale values. Likewise, a significant difference was found between the number of anterior teeth with MIH and the total Oral health subscale and total COHIP-SF19 values. Furthermore 50% of children with MIH had bleeding gums, 16% had difficulty eating foods and 32% had difficulty keeping their teeth clean. Only 8% of children with MIH had been unhappy or sad because of their teeth and 14% felt that they look different because of their teeth. These results showing that MIH has negative impact OHRQoL.
Conclusion: MIH is a common enamel condition, presenting with incisor opacities, which may be of psychosocial concern to children. It is encouraging that dental professionals seem to be aware of the negative psychosocial impacts experienced by some children with enamel opacities, and that children feel able to describe them.

Resin Infiltration of Vestibular MIH Lesions: Outcome Prediction using Transillumination-Aided Diagnosis: A Case Series

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Vestibular enamel opacities related to molar-incisor hypomineralization (MIH) often cause esthetical problems for patients, with resin infiltration offering a conservative and micro-invasive approach for their clinical management. The treatment outcome is however,
recognized as unpredictable due to various factors, including lesion depth and thickness of the surface layer. Transillumination, a technique that offers information on the aforementioned factors, may aid in choosing the optimal procedure and increase predictability of the treatment. Our aim is to illustrate a transillumination-based resin infiltration procedure for treating MIH related enamel opacities.
This clinical case series illustrates five cases showing various clinical representations of MIH related demarcated enamel opacities affecting the maxillary central incisors. Transillumination-aided diagnosis was used to perform a radiation-free evaluation of these lesions to a) pre-operatively to assess the lesion geometry, namely its depth and size as well as the approx. thickness of the surface layer and b). to monitor the gradual exposure of the lesions during the removal of the surface layer, which is mandatory to make the lesions accessible for resin infiltration. Afterwards, the classic protocol of resin infiltration was followed. Transmitted light proved also efficient in monitoring the progression of resin-infiltration.
The appearance of the lesions` extension and location using transillumination-aided diagnosis was a suitable approach in indicating their depth and subsurface extension, which in turn aided the practitioner in choosing the optimal treatment procedure. Transillumination was also reliable in monitoring the progression of the infiltration until complete saturation of the porous enamel.
In conclusion, the use of transillumination-aided diagnosis is a helpful tool to the dental practitioner in obtaining predictable results when enamel opacities related to molar-incisor hypomineralization are treated with resin infiltration.