Treatment Considerations for Defective Eruption of Permanent Teeth Eruption in MIH: A Case Report

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INTRODUCTION

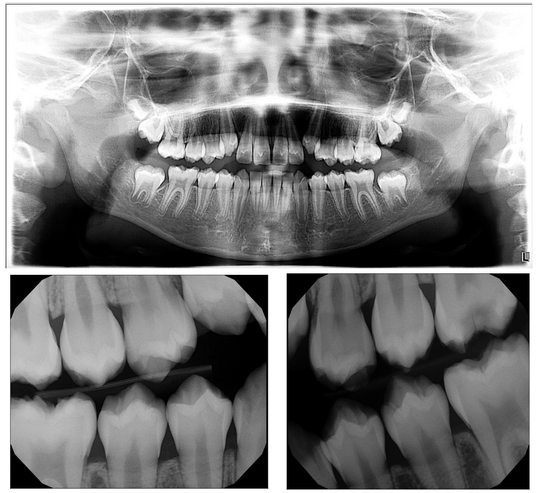
Molar incisor hypomineralization (MIH) is a condition that effects one to four permanent molars along with affected incisors. This condition is considered a developmental enamel qualitative defect which is due to reduced tooth mineralization and inorganic enamel components. The presentation of MIH is characterized by white to brownish color opacities within the enamel; which tends to lead to a gradual breaking down of the teeth along with patients complaining about hypersensitivity. The breakdown of enamel and hypomineralization makes the tooth surfaces susceptible to caries and erosion. Furthermore, the prevalence of MIH varies in different populations and there is no clear answer as to what essentially causes MIH. However, there may be a genetic predilection, environmental factors or even systemic conditions in early childhood that increase the risk of having MIH. There is clarity in the fact that MIH has its challenges which include difficulty achieving profound local anesthesia, maintaining proper oral hygiene, and restorative treatment.

CASE REPORT

A 12-year-old male presented to MetroHealth Family Dentistry in the fall of 2022 accompanied by his mother for a comprehensive exam. Mother's chief concern was the discoloration of her son's permanent incisors along with constant sensitivity. Past medical history includes dental anxiety, no current medications, and no known allergies. Patient has 4 siblings and mom reports that none of them have this dental issue.

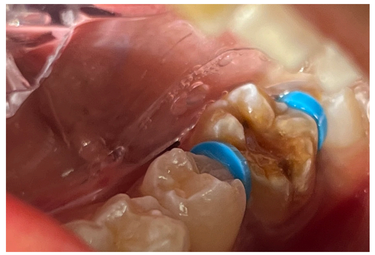
Upon clinical examination, all four permanent molars had yellowish, mottled appearance on the occlusal surfaces with buccal grooves displaying chalkiness. When an explorer was used during examination, hypomineralized enamel was flaking off the molars and patient expressed associated sensitivity. Both permanent incisors 8 and 9 had decalcification along with yellowish-brown appearance and did not exhibit the same degree of chalkiness and flakiness to the molars, however, the patient expressed sensitivity to the explorer. None of the other dentition were affected to this degree, but the patient had general buildup of plaque and calculus build up lingual to the mandibular anterior teeth. OHI was stressed and a treatment plan was discussed with the mom and patient. The patient then continued to be a patient of record and in March 2024 he finally finished his restorative treatment.

RADIOGRAPHIC PRESENTATION

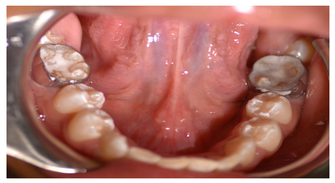


CLINICAL PRESENTATION

Before treatment



After treatment



TREATMENT PLAN/ RENDERED

The proposed treatment plan included: providing full coverage protection for the permanent first molars (3, 14, 19, 30) along with composite restorations on maxillary central incisors (#8 and #9.) Due to the extent of hypomineralization being limited to the occlusal surfaces and buccal grooves of the first molars, RMGI (resin modified glass ionomer) restorations with cemented orthodontic bands were recommended whilst waiting for patient to be in full permanent dentition. In addition, #8 and #9 were recommended to have facial composite restorations with a shade matching composite. It was also explained to the patient and mother that as the patient reaches a stable stage with his dentition, ideally, we would have full coverage crowns placed on 3, 14, 19, 30 and the anterior teeth can potentially have composite veneers or periodic resin infiltration treatment.

The final treatment plan rendered:

- #3: RMGI OB Restoration
- #8: Facial Composite Restoration
- #9: Facial Composite Restoration
- #14: RMGI restoration with cemented ortho band
- #19: SMART technique (SDF+RMGI+Ortho band)
- #30: RMGI restoration with cemented ortho band

DISCUSSION

Of the number of complications associated with MIH, achieving profound local anesthesia was determined as the major complication in this case. Various anesthetics and infiltration techniques were administered, and patient discomfort was still expressed. Additionally, the choice to use RMGI as primary restorative material was determined based off the age, patient cooperation, and anticipation for further treatment. Due to the complexity and frequency in treatment needed for this condition, these restorations will more than likely need to be replaced in the future with permanent extra coronal restorations. In addition, the patient having #1 and #16 present, provides the option to potentially to do second molar substitution as restoring #3 and #14 was deemed difficult to restore. Challenges with restoring the patient's molars and alternative treatments will continue to be presented and discussed with the patient and patient's mom.

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