

Abstract

Molar Incisor Hypomineralization (MIH) is an increasingly frequent condition observed in clinical practice. The treatment of molars affected by severe MIH is a challenge for the clinician, given that structural alterations and tooth composition affect the performance of adhesive materials and can vary from temporary glass ionomer cement restorations to tooth extraction. In this context, a Modified Hall Technique could be successful and easily applied alternative for the management of hypomineralized molars. This poster will discuss the application of different methods in a clinical case.

Background

Molar Incisor Hypoplasia (MIH) is a developmental defect that is systemic in origin and affects one or more than one permanent first molars, and is often associated with permanent incisors. Typically, no other permanent teeth are involved. It is characterized by well demarcated opacities and enamel defects caused by decreased inorganic enamel components and reduced mineralization. Several aspects of dental treatment for MIH are challenging, such as behavior management, difficulty in achieving adequate local anesthesia, hypersensitivity, and retention of restorations.

Etiology: The causative mechanisms of MIH are unknown, but is considered to be multifactorial in nature. Congenital, environmental and systemic conditions have been proposed. Other suggested causes include childhood diseases as well as conditions that may influence or disrupt amelogenesis during the early development of the permanent first molars.

Diagnosis: Diagnosis can be challenging, and may be confused with other hereditary conditions, particularly developmental enamel defects such as amelogenesis imperfecta, fluorosis, or enamel hypoplasia. The criteria for diagnosis are based on the clinical findings of well demarcated opacities, post-eruptive breakdown, atypical restorations, and permanent first molar extraction for reasons suggestive of MIH.

Clinical Features

Characteristic features of MIH are clear demarcation between the affected and sound enamel and asymmetry of defects present in molars and incisors. The most important sign of MIH is *hypersensitivity* during brushing due to porous enamel which leads to subclinical pulpal inflammation. The hypomineralized enamel will be softly porous with a discolored chalky appearance and demarcated white/yellow/brown opacities. In molars, posteruptive enamel breakdown is common due to occlusal loading and rapid caries progression due to porous and friable enamel structure.

Clinical Management

- Treatment of molars affected by severe MIH is a challenge for the clinician, given that structural alterations and tooth composition affect the performance of adhesive materials and severe hypersensitivity is difficult to manage.
- The treatment options of severely affected molars can vary from temporary glass ionomer cement restorations to extractions.

Modified Hall Technique is a successful and easily applied non-invasive technique for the management of hypomineralized molars that can be used to control hypersensitivity, restore, and protect the tooth.

Technique:

- Use of preformed stainless-steel crowns for primary and permanent molars without tooth preparation.
- A large primary second molar preformed steel crown can be used for first permanent molars if needed.

Concerns and long-term prognosis: Increased vertical dimension of the patient's occlusion immediately after cementation that returns to normal and has no effect on TMJ, possible mastication through crown, gingival health, possible interference with second molar eruption

Case Report

Patient EC:

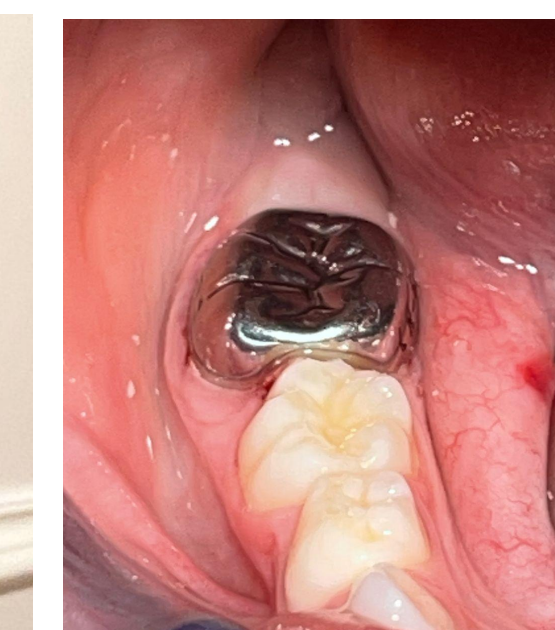
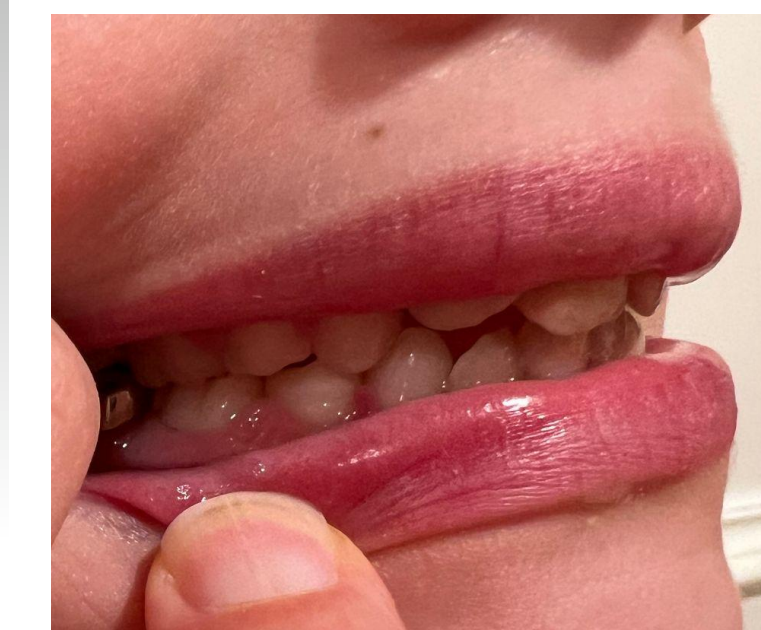
- 7 year, 6 month old female presented to the University of Michigan School of Dentistry clinic
- Medical History: no pertinent medical conditions
- Medications: none
- Allergies: none known
- Family History: Lives at home with Mom and Dad and 2 older siblings (otherwise healthy)
- Dental history: Referred for a second opinion for treatment options for severely hypomineralized molars
- Chief complaint: "Severely sensitive broken down molars."



Initial presentation



Post-op day of treatment



Exam findings:

Extraoral examination: no pathology noted, neutral profile, no pain on opening or closing

Intraoral examination: Mixed dentition, crowding, crossbite #H-#14/ #M-#19, mild generalized gingivitis, molar incisor hypoplasia affecting #3, #7, #8, #9, #14, #19, #23, #24, #25, #26, #30

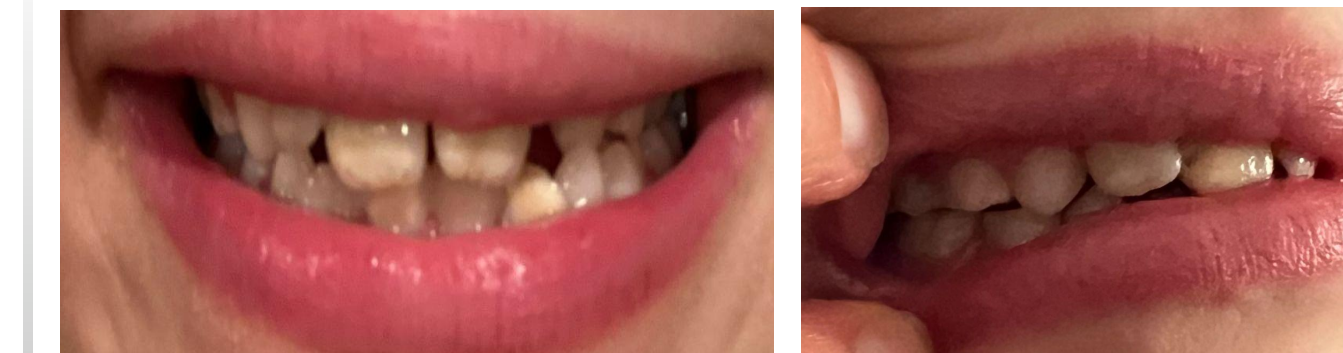
Caries risk assessment: high

Treatment plan: #3, #14, #19, #30 SSC in graduate pediatric dental clinic, fluoride application on anteriors

Behavior: Extremely anxious, tears during treatment

Outcomes assessment: Decreased sensitivity on maxillary and mandibular molars, stable occlusion noted after 6 months, no complaints at this time

3 months post-operative



6 months post-operative



Conclusion

The importance of making an early diagnosis of MIH through clinical findings of enamel developmental defects is essential in allowing for less invasive and uncomfortable treatments for the patient and improvement of long-term prognosis. The Modified Hall Technique is a promising treatment option in managing molars affected by severe MIH.

References

- Almulhim B. Molar and Incisor Hypomineralization. JNMA J Nepal Med Assoc. 2021 Mar 31;59(235):295-302. doi: 10.31729/jnma.6343. PMID: 34506432; PMCID: PMC8369532.
- Goel N, Jha S, Bhol S, Dash BP, Sarangal H, Namdev R. Molar Incisor Hypomineralization: Clinical Characteristics with Special Emphasis on Etiological Criteria. J Pharm Bioallied Sci. 2021 Jun;13(Suppl 1):S651-S655. doi: 10.4103/jpbs.JPBS_801_20. Epub 2021 Jun 5. PMID: 34447173; PMCID: PMC8375803.