

# Molar Incisor Malformation: A Case Report and Clinical Considerations

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## Introduction

Anomalies of enamel, dentin, and other tooth structures can be influenced by environmental factors that affect differentiation, apposition, and mineralization stages of tooth development. Disruptions during the histodifferentiation and/or apposition phases can cause enamel anomalies. Furthermore, disturbances of the dental papilla and Hertwig's root sheath can cause root anomalies. Researchers believe that a dental anomaly termed Molar Incisor Malformation (MIM) is caused by abnormalities or signal disruptions during the development and formation of enamel and roots. Insult to the central nervous system during the first one to two years of life is believed to be the cause of MIM. Seizures, irradiation, brain trauma, meningitis, and spina bifida are some examples of reported disruptions.

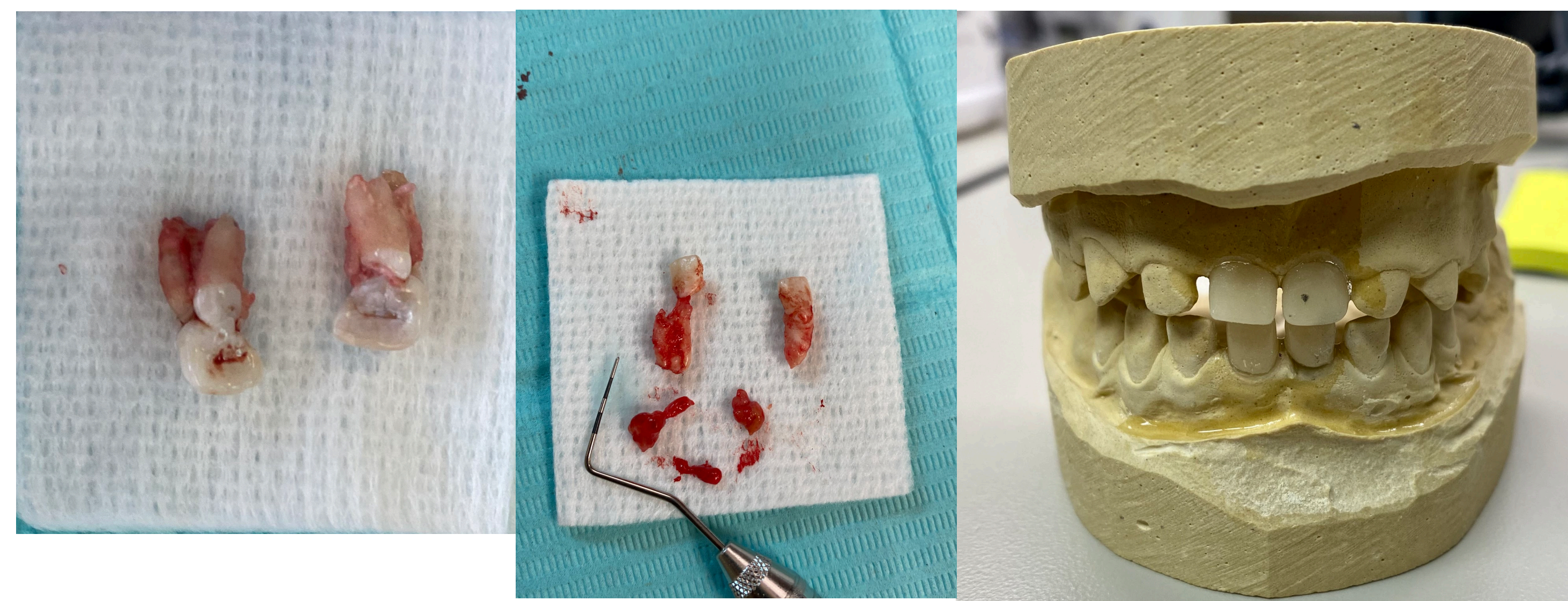
MIM is a dental anomaly that affects primary second molars, permanent first molars, and permanent central incisors. Typically, the clinical crown of affected teeth appear with normal color and size however, radiographic examination often reveals cervical constrictions, deformed, short, thin, narrow, or even obliterated roots. Flattened pulp chambers can often be observed on radiographic examination as well. Although not all maxillary central incisors display this, some may have a hypoplastic notch in the enamel. The clinical and radiographic presentation of MIM may often closely resemble congenital dentin conditions such as dentinogenesis imperfecta and dentin dysplasia. The prevalence of MIM is unknown.

## Case Report

In this case report, a 10 year old male presented to the dental clinic on 9/18/20 with a reported history of pain on his maxillary central incisors and abscesses affecting teeth #8, 9, 24, 25. The panoramic and periapical radiographs revealed periapical radiolucencies affecting teeth #8, 9, 24, 25, a lateral radicular cyst associated with #24, and teeth #3, 14, 19, 30 with obliterated roots. After the diagnosis of molar incisor malformation was made, a referral was sent to the Marquette University School of Dentistry graduate endodontics department. They concluded that #8, 9, 24, 25 are non-restorable due to the severity of the radicular malformations.

The patient presented again to the dental clinic through the emergency department on 10/22/21 for upper front tooth pain and a buccal and palatal abscess overlying #9. After consultation with a pediatric dental attending and an oral surgery attending, #8 and #9 were extracted and the palatal abscess overlying #9 was incised and drained. The patient was put on a seven day course of penicillin. The treatment was completed after a total of five operative visits. It consisted of extractions of #3, 8, 9, 14, 19, 24, 25, 30, enucleation of the lateral radicular cyst of #24, upper and lower alginate impressions, and fabrication of upper and lower essix retainers with composite filled in the space of #8, 9, 24, 25. Teeth #3, 8, 9, 14, 19, 24, 25, 30 were extracted due to their poor prognosis. Essix retainers were made in order to address the patient's chief concern of esthetics. Implants and crowns were not considered due to the patient's age and future adolescent growth spurt.

## Case Documentation



Panoramic radiograph taken 9/18/20

## Future Considerations

Given the patient's age, changing occlusion/dentition, and stage of development, more definitive options were not considered. Essix retainers were completed as a interim solution to address the chief concern of esthetics. Future options like implants, removable partial dentures, or bridges can be considered after the patient finishes growing.

The first permanent molars were extracted given their poor prognosis and space closure will hopefully be achieved through second molar substitution. The patient's permanent second molars were approximately in stage E of Demirjian's classification system which is ideal for second molar substitution.

## Conclusion

This particular case suggests the importance of close follow-up and timely treatment as needed for patients with molar incisor malformation. Punctual care was particularly important for this case due to the time sensitivity of second molar substitution in order to optimize space closure between the second permanent molars and second premolars.

It is important to note that the essix retainers were fabricated purely to improve esthetics and not for function. An other option like fabricating an interim removable partial denture would have addressed the patient's chief concerns as well but was not considered due to the increased cost and difficulty with maintaining retention after exfoliation of primary teeth and growth.

## Resources

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