

# MOLAR INCISOR HYPOMINERALIZATION

Treatment solutions for MIH

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# A GLOBAL BURDEN CONCERNING ONE IN SEVEN CHILDREN<sup>1, 2</sup>

Molar Incisor Hypomineralization (MIH) is a common developmental condition affecting primarily one or more first permanent molars. The central incisors may be affected as well, but this usually occurs to a lesser extent. Hypomineralization of the second deciduous molars (HSPM) or canines may also occur.<sup>3</sup> Children with HSPM are up to five times more likely to develop MIH in the permanent dentition. Great varieties in severity exist, ranging from mild opacities to posteruptive enamel breakdown.

Currently, the etiology of MIH is still unknown. Some correlations with prenatal, perinatal and postnatal illness, exposure to antibiotics or chemicals such as dioxin, bisphenol A and polychlorinated biphenyl have been described, but sufficient evidence is still lacking.

## Symptoms:

- Hypersensitivity and decreased response to local anesthesia
- Rapid caries progression
- Posteruptive breakdown

## Clinical management of MIH is challenging due to:

- Hypersensitivity and rapid development of dental caries in affected teeth
- Difficulty in achieving anesthesia
- Limited cooperation of the young child
- Repeated marginal breakdown of restorations
- Often, an increased number of dental visits is required



Children with MIH often develop dental anxiety as a result of invasive and even painful dental experiences at a young age.

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# CLINICAL APPEARANCE

- Demarcated opacities, ranging from creamy white to yellow, brown discoloration
- Defective enamel has normal thickness (unless posteruptive breakdown has occurred)
- Lesions may occur asymmetrically
- When a first molar is severely affected, there is an increased chance that the contralateral molar is also affected
- Lesions of central incisors are usually milder, but they can sometimes be unsightly



**Mild MIH**

*Courtesy of Prof. van Amerongen,  
the Netherlands*



**Moderate MIH**

*Courtesy of Dr. Jeanette MacLean, USA*



**Severe MIH**

*Courtesy of Dr. Jeanette MacLean, USA*



**Affected incisors as part of MIH**

*Courtesy of Prof. Baroni, Italy*

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# INITIAL INTERVENTION

## Empowering your patients

- The teeth should be brushed twice a day with a toothpaste containing at least 1,000 ppm fluoride. Fluoride content should be age-appropriate; in older patients higher levels of fluoride may be desirable.
- Using identification tools, such as a disclosing gel, can help to identify cariogenic plaque, motivate patients and give them the opportunity to optimize their brushing technique
- Frequent intake of sugar and acidic food should be avoided
- Topical treatments are useful to strengthen teeth and decrease sensitivity in MIH. The application of RECALDENT™ (CPP-ACP)<sup>†</sup>, containing high levels of bio-available calcium and phosphate, has been shown to be effective in this case.<sup>4,5</sup>



## Providing extra fluoride

The use of topical fluorides helps to remineralize enamel as well as inhibit bacterial metabolism, thus minimizing plaque bacteria growth. Topical fluoride can be delivered as a paste, gel, foam, rinse, or varnish. Fluoride varnishes are

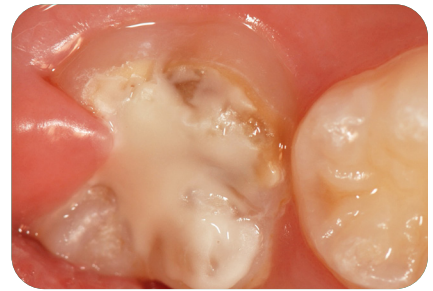
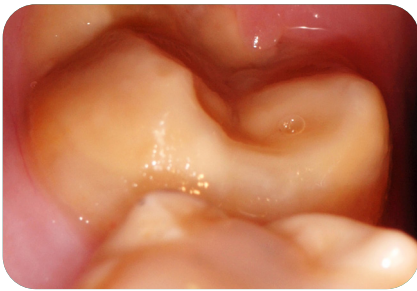


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# PROTECT SURFACES WITH GI SEALANTS

**A low-viscosity glass ionomer can help protect the surface against caries formation and hypersensitivity**

- Glass ionomer sealants can bond chemically in a moist environment
- Teeth can be protected even before they are fully erupted
- Glass ionomer sealants release additional fluoride into the oral environment for additional protection



*Courtesy of Dr. Rouas, France*

## Early protection is important to avoid complications

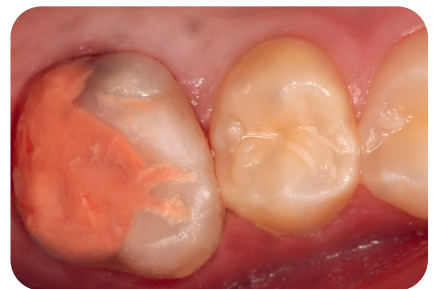
- Fast and easy application; perfect for first-line treatment
- Helps to postpone or even avoid more invasive treatment options
- Since the procedure is generally well tolerated by children, the risk of developing dental anxiety is reduced



*Courtesy of Dr. Lance Kisby, USA*



*Courtesy of Dr. Mark L. Cannon. USA*



*Courtesy of Prof. Gatón Hernández, Spain*

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# RESTORATIVE TREATMENT

## Long-term restorations

- The chemical adhesion and moisture tolerance of glass ionomers and glass hybrids (such as EQUIA Forte® HT) offer a great advantage since adhesion to hypomineralized enamel is challenging.
- In case teeth are difficult to anesthetize, hand instruments (such as a spoon excavator) can be used to excavate caries before application of the glass ionomer/glass hybrid.
- A composite can be placed when the lesions are very well demarcated and do not require too much additional removal of tooth tissue.
- Alternatively, a Silver Modified Atraumatic Restorative Treatment (SMART) can be used. It involves the application of Silver Diamine Fluoride

(SDF) followed by a restoration with a self-adhesive, long-term restorative. In SMART, SDF arrests the decay while glass-based restorations help hide stains and provide an excellent seal to protect against further decay.

## Interim restorations

- In some cases of severe MIH, a long-term solution such as full-coverage crown or orthodontic extraction is not advised immediately due to the young age. In such cases, glass hybrids can be used as an interim restoration until the patient/family are able to take the next step.
- Alternatively, severe cases can be restored with Hall technique, a stainless steel crown luted with RMGI cement such as GC FujiCEM® Evolve.

## SMART Technique with EQUIA Forte®



*Courtesy of Dr. Jeanette MacLean, USA*

## Hall Crown Technique with GC FujiCEM® Evolve



*Courtesy of Dr. Jeanette MacLean, USA*



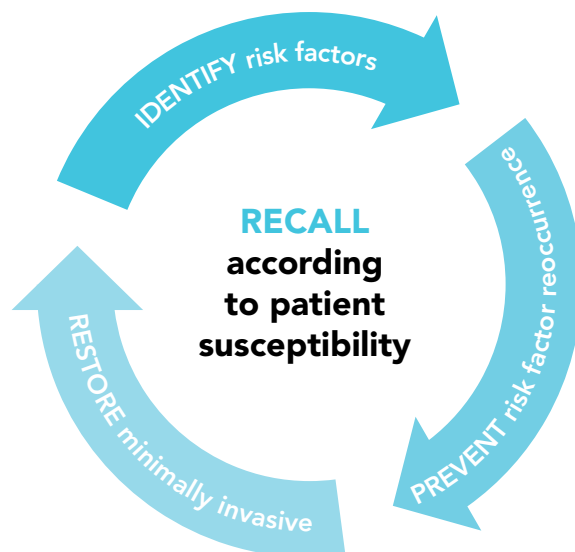
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## RECALL

The recall frequency is usually higher for patients with MIH, due to the higher caries susceptibility. Several points have to be kept in mind:

- Restorations need to be controlled regularly, as adhesion to hypomineralized enamel is challenging
- It is important to maintain the patient's compliance to home treatment and to evaluate its effects regularly
- Oral hygiene and dietary habits should be regularly evaluated
- Interim restorations need to be monitored and replaced when the circumstances have become appropriate for definitive treatment

An important part of the preventive strategy is the home care. It is crucial to motivate and educate the child/caregiver because they are the ones who will have to implement good oral hygiene habits and healthy dietary intake.





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## LEARN MORE!

Click the button below to request a FREE Lunch & Learn CE program\* and learn more about MIH, other topics in dentistry, and specific products for prevention and treatment.

[Schedule a Lunch & Learn](#)

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