Meeting the challenges of molar incisor hypomineralisation

Greig Taylor[1]

Introduction

Molar incisor hypomineralisation (MIH) is a qualitative developmental enamel defect that is a worldwide problem and affects around 10% of children globally.[1] The cause is not fully known; however, it is thought to be connected to an alteration in maturation stage of amelogenesis caused by both systemic and environmental factors, around birth and in the first three years of childhood. These could include many conditions, however good evidence exists for those that cause a lack of oxygen (hypoxia), such as caesarean sections and prematurity.

The term molar incisor hypomineralisation was first coined by Weerheijm and colleagues in 2001. While dentists were aware of hypomineralised teeth in children, previously referred to as 'cheese molars' as the enamel of the teeth is less mineralised and porous, it is only in the last 20 years that we have started to formally understand MIH as a disease process.

This is also why MIH appears to be more prevalent today. As we get better at diagnosing the condition, we are able to teach undergraduates, as well as qualified dentists, more about the disease and the symptoms to be aware of.

The problem of MIH

The predominant problem with MIH in molars of children is the issue of sensitivity, which can be challenging in terms of eating and drinking and makes brushing particularly difficult. Sensitivity has a real impact on a child's quality of life because they cannot eat certain foods and as the teeth start to break down it becomes very uncomfortable.

This means children often miss school, take regular pain relief, have antibiotics prescribed, and are unable to join in with their favourite social activities. It affects the wider family as well, with parents and carers having to learn to deal with the issues caused by MIH and the long-term treatment process.

Clinical signs

As the tooth starts to crumble and the child is unable to brush properly because of the sensitivity, the perfect cariogenic environment is created. This can lead to atypical carious lesions and make it difficult for clinicians to identify MIH as the underlying cause. So, what are the signs to look out for?

The clinical presentation of MIH depends on its severity and there is a wide spectrum of presentation, both in the number of affected teeth and the effect on the teeth. In the permanent dentition, MIH always occurs on one to four permanent first molars and sometimes on the incisors as well. It can be easier to identify MIH on the incisors as it can present as discrete opacities on the buccal, incisal or palatal surface of the tooth. MIH on the molars can be overtly obvious, or more subtle. They are discreet and can affect any surface, but tend not to start in typical areas where you would expect to see decay occurring e.g., interproximal, fissures. It can range from white opacities, to white, brown, yellow and creamy spots on the teeth. There can also be signs of post-eruptive breakdown of the enamel, where the newly erupted teeth cannot cope with occlusal or biting forces and thus crumble away.

[1] Dr. Greig Taylor
BDS (Hons) M Paed Dent PhD
NIHR Clinical Lecturer in Paediatric Dentistry, Newcastle University, UK

Affected incisors as part of MIH. - (C. Baroni, Italy)

Mild MIH – (E. van Amerongen, The Netherlands)

Moderate MIH – (C. Baroni, Italy)

Severe MIH – (C. Baroni, Italy)

Treatment options

The clinical management of MIH depends on how sensitive or broken down the teeth are, the age of the child, the underlying orthodontic need and whether the teeth are likely to last into adulthood. When the decision is made to save and restore a tooth, there are several things to consider.

Dental amalgam cannot be used to treat children in the UK and the evidence suggests that amalgam does not work satisfactorily in hypomineralised teeth. The choice of an alternative material depends on what is in the best interests of the patient at the time. Conventional composite resin is an option but there are situations in which the patient might struggle from a co-operation point of view, moisture control can be difficult and there can be issues placing rubber dam.

For a definitive composite restoration, EQUIA Forte HT (GC) is indicated as an amalgam replacement and for the restoration of teeth affected by MIH. It is particularly suitable for treating children as it's fast and easy to place, it is moisture-tolerant and I use this for my MIH patients.

When treating children with hypomineralised teeth and in view of the subsequent sensitivity, it can be challenging to get local anaesthesia to work effectively. With EQUIA Forte HT, rubber dam is not routinely needed. Even in particularly difficult areas where the hypomineralisation defect goes to the gingival margin or goes sub-crestal, there is no need for conditioning or bonding due to its inherent chemical adhesion properties.

Managing MIH

Implementing effective treatment strategies for MIH relies on the co-operation of the paediatric patient and actively involves parents or carers supporting the child during dental appointments and helping with good oral hygiene practices at home.

It is important to address parents' concerns in a sensitive manner and not make them feel any sense of guilt or shame for their child's condition. It is even more important to remember the impact of MIH on affected children, and that is why I believe we should actively involve children in any decision-making about their treatment at all times.

The way ahead

As well as being involved in undergraduate and postgraduate teaching in paediatric dentistry, I am currently working on a programme of clinical research focusing on MIH, health economics and addressing oral health inequalities, to bring a greater awareness of MIH to the dental profession.

The impact of MIH and the challenges it brings to the dental profession means ongoing research and education is essential, as well as the development of an advanced and proven range of materials and treatment modalities - such as those from GC - which I believe can really enhance the quality of care for children affected by MIH.

Reference

1.https://contemppediatrdent.org/worldwide-prevalence-of-molar-incisor-hypomineralization-a-literature-review/