Clinical Management Approach of Molar Incisor Hypomineralisation. A Case report.

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Abstract
Molar incisor hypomineralisation (MIH) is a relatively common dental defect that appears in first permanent molars and incisors and varies in clinical severity. The specific aetiopathological factors remain unclear. Inappropriate diagnosis can result in mismanagement of the condition and results in early loss of first permanent molars (FPM) in particular. Therefore, the early identification of such condition will allow early intervention including monitoring and preventive interventions that might help in remineralisation of the hypomineralised tooth structure. These preventive measures can be instituted as soon as affected surfaces are accessible.

Clinical relevance statement
Failure of early diagnosis and dental management in cases of Molar Incisor Hypomineralisation (MIH) leads to rapid development of dental caries, increased pulpal inflammation and continuous enamel as well as restoration breakdown.

Objective statement
The reader should understand the Molar Incisor Hypomineralisation (MIH) condition and the availability of different management options of this condition.

Introduction
Molar Incisor Hypomineralisation (MIH) is a developmentally derived dental defect that involves hypomineralisation of 1 to 4 first permanent molars (FPM), frequently associated with similarly affected permanent incisors. The pattern of enamel defects consists of asymmetric, well-demarcated defects affecting the enamel of the FPMs and is associated with similar defects in permanent incisors and canines tips. (1)

~ Prevalence
Available modern clinical prevalence data for MIH, mostly from Northern Europe, ranges from 3.6% to 25% and seems to differ between countries and birth cohorts. (2)

~ An etiology
An etiology of this condition is poorly understood, with many associated factors (including environmental changes, breast feeding, respiratory diseases, oxygen shortage of ameloblasts and high fever diseases) but few proven causative agents. (3)

~ Clinical Features
Fairly large demarcated opacities, whitish-yellow or yellowish-brown in colour that may or may not be associated with post-eruptive enamel breakdown. Hypomineralised enamel can be soft, porous and look like cheese. Subsurface porosity leads to breakdown after eruption, especially under occlusal forces, resulting in exposed dentine and sensitivity. (4)

~ Management
Permanent molars affected by hypomineralisation are prone to rapid development of dental caries and repeated breakdown of restorations. Therefore, careful planning is required, taking into account patient's age (behaviour management issues), degree of crowding and co-operation. Sensitivity of affected teeth plays a major role in difficulty of achieving anaesthesia and thus behavioural issues.

- Preventive
  - Diet advice
  - Higher fluoride toothpaste (at least 1450 ppm F)
  - Topical fluoride varnish
  - Casein phosphopeptide-amorphous calcium phosphate (CPP-ACP)

- Restorative:
  - A small lesion can be treated with localized composite, where the enamel is soft, or fissure sealants, where the hardness of the enamel appears no different from the unaffected enamel.
  - GIC is recommended as dentine replacement or as an interim restoration due to ease of placement, fluoride release and chemical bonding.
  - For extensive lesions with post-eruptive breakdown especially if the cusps are involved, preformed stainless steel crowns (SSCAs) are preferred as an effective medium-term restoration. SSCAs can preserve the FPM until cast restorations are feasible. (5)

- To save the tooth or not?
  - The first decision in the management of the MIH FPM is whether the tooth should be saved or not. The decision to extract or restore will depend upon a number of different factors, some of these being the degree/extent of hypomineralisation, post-eruptive breakdown, sensitivity, age and cooperation of the patient, any
Treatment

The treatment plan was set in two phases including Short/Medium term and long term.

1. Short term: The short term will start with Emergency phase for restoring the 26th with GR as a temporary filling. An extensive preventive programme was implemented in addition to diet assessment, analysis, and advice. Fluoride application in several visits crown preparation was done under local anesthesia for 36, 46, and 26 with stainless steel crown placement. Patient's occlusion was checked for discrepancy in each visit.

2. Long term: A fit and healthy 10-year-old patient (S.S) was diagnosed as MIH in epidemiologic studies. s.s received fluoride treatment with protection of not achieving complete eruption of the dental treatment but maintaining the dental hygiene. The treatment plan was set in phases including Short/Medium term and long term.

Aims and objectives of treatment:

1. To alleviate the pain and sensitivity.
2. To preserve the structure of the weakened FPMs.
3. To formulate an individualised realistic preventive scheme and reinforce it regularly.
4. To monitor eruption and development of dentition.
5. To maintain good oral health in the long term.

Diagnostic Summary:

A fit and healthy 10-year-old girl in the late mixed dentition with molar incisor hypomineralisation (MIH). MIH was diagnosed based on clinical appearance. See Figures 1 (a, b, c & d) for clinical features and b (a, b & c) for radiographic findings. A diagnostic list and treatment plan was formulated by a specialist of Paediatric dentist as well as orthodontist and explained in detail to the father.

Radiographic investigations were done including (OPT and PA radiographs) to assess the proximal of the coronal defect to the pulp to evaluate the periodontal region and to ascertain the presence and stage of development of remaining primary teeth and maxillary permanent incisors (especially lower 5s, 5s and 8s).

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Treatment Plan:

1. Short/Medium term:
   - Emergency phase: S.S was seen regularly with the parents and children's dentistry and orthodontist.
   - Preventive care phase: s.s was diagnosed as MIH in epidemiologic studies. s.s received fluoride treatment with protection of not achieving complete eruption of the dental treatment but maintaining the dental hygiene. The treatment plan was set in phases including Short/Medium term and long term.

2. Long term:
   - To monitor eruption and development of dentition.
   - To preserve the structure of the weakened FPMs.
   - To formulate an individualised realistic preventive scheme and reinforce it regularly.
   - To monitor eruption and development of dentition.
   - To maintain good oral health in the long term.

Conclusion:

The presence of MIH molars not only requires the dentist to identify problems at the earliest opportunity, but also to clarify the problem thoroughly and explain the treatment options to the patient and their carers.

References: