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 etiological 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 tups. (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 yellow-brown in colour that may or may not be associated with post-eruptive enamel breakdown. Hypomineralised enamel can be soft, porous and look like discoloured chalk or Old Dutch 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 the 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 1450ppm F)
  • Topical fluoride varnish
  • Casein phoshopeptide-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 (SSCs) are preferred as an effective medium-term restoration. SSCs can preserve the FPM until cast restorations are feasible. (5)(6)

- 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 co-operation of the patient, any...
Radiographic investigations were done including (OPT and PA radiographs) to assess the proximity of the coronal defect to the pulp and to evaluate the periodontal region and to ascertain the presence and stage of development of remaining permanent premolars (especially lower 5s, 7s and 8s).

MIH was diagnosed based on clinical appearance. See Figures 1 (a, b, c & d) for clinical findings and radiographs for radiographic findings. A diagnostic list and treatment plan was formulated by a specialist of Paediatric dentist as well as orthodontist and explained in details to the father.

Case report

A ten-year-old patient (S.S) with no significant medical history or allergies presented to the Department of Paediatric Dentistry at Hamdan Bin Mohammed College of Dental Medicine (HBMCDM) in Dubai Healthcare City, Dubai (UAE). Complaining of slight pain due to a dislodged filling in her upper left region. Presently the tooth is asymptomatic. The pain is described as intermittent during the day, lasts for a while (hour or less), does not stop her playing or affect her sleep.

Detailed history was taken from the father. The father reported that (S.S) had a significant number of upper respiratory tract infections and tonsillitis during early years of life. Clinical and radiological examination of (S.S) revealed yellowish discoloration of the enamel on the occlusal surfaces of 16 and 26, 26 presented with a dislodged filling, 36 and 46 had big composite fillings. The presentation of the FPM was done under local anesthesia for 36, 46, 16 and 26. S.S had big composite fillings.

MIH was considered to be of high caries risk status. She was kept on regular recall programme including restorations and fluoride varnish application every 6 months, radiographs every 6 months. See Figures 5 (a, b, c & d) for radiographic findings.

Discussion

Children with MIH have higher treatment needs and significant challenges in behaviour management than other children. S.S was a quiet girl who was apprehensive in the beginning but willing to have the treatment. S.S was diagnosed as MIH in the first permanent molars. Using non-pharmacological behaviour management techniques including reward and show and do, distraction helped to acclimatize S.S to dental treatment. These techniques are widely used in children's dentistry and well accepted by parents. The technique works well combined with behaviour shaping. S.S was rewarded with a gift after each appointment as positive reinforcement for her good behaviour and cooperation. 26 was temporized with glass ionomer to relieve discomfort, stabilize the situation and to reduce bacteria count present in the oral cavity.

Conclusion

The presence of MIH molars not only requires the dentist to identify problems at an early stage but also helps to clarify the problem thoroughly and explain the treatment options to the parents and child.

The use of nitrous oxide inhalation sedation can be a useful adjunct in obtaining satisfactory anaesthesia in MIH patients. Nitrous oxide was not used in case of S.S due to parental refusal because of limited financial resources. Had this patient presented earlier, consideration for enforced extraction of FPM would have been considered.