



RESIN INFILTRATION TECHNIQUE FOR THE MANAGEMENT OF ENAMEL LESIONS: A CASE REPORT.

Dr Risla P S¹, Dr Vijai S², Dr Anusree Sadanandan^{3*}

Abstract:

Enamel carious lesions are characterized by demineralization, resulting in greater visual enamel opacity due to alteration of the refractive index of the affected area. This may cause esthetic concerns among most patients and if left untreated may lead to further progression of the lesion. Several treatment options like bleaching, microabrasion, and resin infiltration, composite resin bonding are available to attain the natural tooth colour. Resin infiltration technique is gaining importance with passing years. It is not only used to manage hypomineralized incisors but also provides esthetic rehabilitation and is minimally invasive. This case report describes 2 cases of molar incisor hypomineralization and its treatment using Resin Infiltration technique.

Keywords: Minimum intervention dentistry, Resin infiltration, white spot

¹Post Graduate, Department of Pediatric and preventive Dentistry

²MDS, Head of the Department, Department of Pediatric and Preventive Dentistry

^{3*}MDS, Senior Lecturer, Department of Pediatric and Preventive Dentistry

Name of Department and College: Department of Pediatric and Preventive Dentistry, Malabar Dental College and Research Centre, Manoor, Edappal, Malappuram, Kerala.

***Corresponding Author:** Dr Anusree Sadanandan MDS

*Senior Lecturer, Malabar Dental College and Research Centre, Manoor, Edappal, Malappuram district Kerala, PIN : 679582

DOI: - 10.48047/ecb/2022.11.12.121

Introduction:

Molar incisor hypomineralisation (MIH) is a common developmental dental condition that presents as defined areas of hypomineralised enamel and affect one or more first permanent molars and incisors. These teeth may become sensitive, undergo post-eruptive tissue breakdown and be predisposed to dental caries. Associated opacities on anterior teeth are less likely to have functional problems but may result in cosmetic and psychosocial issues.¹ Resin infiltration technique was first described by Muñoz, M. A., et al.² in 2013. It is a minimally invasive treatment option which is used to blending different microporous lesions, mild-to-moderate fluorosis, and hypoplasia stains related to traumatic dental injuries. This case report study to evaluate the effect of superficial infiltration with ICON (DMG, Hamburg, Germany) in the treatment of white enamel defects of the anterior teeth in children.

Case presentation:

An 8 year old male child visited the department of pediatric and preventive dentistry with a chief complaint of discoloration on his upper front teeth

region. He was not happy with the appearance of his anterior teeth. The upper anterior dentition had discolouration and showed as hypomineralised stained areas around the labial surface of the teeth. After clinical examination and with patient's medical and dental history, the lesion was diagnosed as MIH.(Figure 1)

The staining was hard and dark brownish in appearance and was mainly due to his failing to maintain an exceptional level of oral hygiene. There were no other intraoral and extra-oral abnormalities and he had no other medical condition. All treatment options were discussed with the patient and the parents, along with risks and complications and their consent was taken before the treatment.

Treatment:

The treatment was carried out by under rubber dam isolation thus in order to prevent contamination, soft tissue irritation and to achieve the ultimate isolation required for such technique sensitive procedure. The pretreatment image is presented in figure 1



Figure 1: Pre-treatment image

Step 1: the teeth were cleaned and Icon-Etch (HCl 15%) was applied for 2 minutes and rinsed off with water for 30 seconds. (Figure 2)



Figure 2: etching

Step 2: Icon-Dry (99% ethanol) was applied and left to set for 30 seconds to desiccate the lesion (figure 3)



Figure 3: Application of Icon-Dry

Step 3: The icon infiltrant is then applied over the lesion and is allowed to penetrate for 5 minutes (Fig 4). The excess is then removed with a cotton pellet and light cured (Fig 5).The application of

infiltrant is repeated 2 to 3 times to reduce enamel porosities. Finally the rough surface is polished with rubber disks 6 to obtain a smooth surface.



Figure 4: Application of Icon infiltrate



Figure 5: light cure

Outcome

The results of the treatment showed a satisfactory outcome (Figure 6). There were no reports of gingival or soft tissue irritation, also no post-

operative sensitivity or pain. The patient was happy with the results.



Figure 6: postoperative teeth

Discussion:

Resin infiltration technique is a novel technology that bridges the gap between prevention and restoration of carious lesions up to the first third of dentin and can camouflage aesthetically disfiguring white lesions on the buccal surface.³ The technique is based on the principle of creating a diffusion barrier inside the lesion and not on the lesion surface. resin infiltration peruses the porous

enamel with resin by capillary action, thereby arresting lesion progression by occluding the microporosities that provide diffusion pathways for the acids and dissolved materials.⁴

Icon etch contain 15% hydrochloric acid gel which creates more microporosities than that with 37% orthophosphoric acid thereby increasing penetration capability of “icon”.⁵ The refractive

index of icon infiltrant is 1.46 ,which is very similar to that of enamel (1.62) thereby after its application the chalky white lesion appears similar to that of sound enamel.⁶ Resin infiltration technique is a microinvasive cosmetic technique that fills, reinforce, masks and stabilize demineralized enamel, improving esthetics, preventing caries progression , sensitivity and increasing the patient compliance in cases with mild MIH. But in cases of severe MIH, resin infiltration technique alone is not enough to mask the enamel defect and requires the use of composite resin restoration along with it.

REFERENCES

1. Rodd HD, Graham A, Tajmehr N, Timms L, Hasmun N. Molar Incisor Hypomineralisation: Current Knowledge and Practice. *Int Dent J.* 2021;71(4):285-91.
2. Muñoz MA, Arana-Gordillo LA, Gomes GM, Gomes OM, Bombarda NH, Reis A, et al. Alternative esthetic management of fluorosis and hypoplasia stains: blending effect obtained with resin infiltration techniques. *J Esthet Restor Dent.* 2013;25(1):32-9.
3. Manoharan V, Arun Kumar S, Arumugam SB, Anand V, Krishnamoorthy S, Methippara JJ. Is Resin Infiltration a Microinvasive Approach to White Lesions of Calcified Tooth Structures?: A Systemic Review. *Int J Clin Pediatr Dent.* 2019;12(1):53-8.
4. Paris S, Meyer-Lueckel H, Cölfen H, Kielbassa AM. Resin infiltration of artificial enamel caries lesions with experimental light curing resins. *Dent Mater J.* 2007;26(4):582-8.
5. Meyer-Lueckel H, Paris S, Kielbassa AM. Surface layer erosion of natural caries lesions with phosphoric and hydrochloric acid gels in preparation for resin infiltration. *Caries Res.* 2007;41(3):223-30.
6. Subramaniam P, Girish Babu K, Lakhota D. Evaluation of penetration depth of a commercially available resin infiltrate into artificially created enamel lesions: An in vitro study. *Journal of Conservative Dentistry.* 2014;17(2):146-9.