



Resin Infiltration Treatment of Hypomineralized Enamel: Case Report

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ABSTRACT:

Hypomineralized enamel defects can significantly impact patients' appearance. Treatment options range from cautious to invasive, depending on severity. In dental aesthetics, resin infiltration is increasingly used to treat these defects, a minimally invasive treatment that can be completed in one visit, saving time, pain, and discomfort. A 30-year-old male patient expressed dissatisfaction with his smile and discomfort with invasive treatment. Clinical examination revealed opaque white spots on the incisal level, possibly due to trauma to his primary teeth. A hypomineralization of traumatic origin was diagnosed. Treatment with Icon® resin material was chosen. Teeth were isolated, treated with 15% hydrochloric acid gel, rinsed, dried, and applied with Icon®-Dry. For deeper lesions, etching was repeated. The resin was injected into the tooth surface, allowed to settle, and light-cured before finishing and polishing. The superficial infiltration approach offers a minimally invasive treatment option, but has limitations, particularly for deep or yellow lesions requiring micro-abrasion or surface sanding.

Keywords: Icon® resin infiltration, minimally technique, dental enamel hypomineralization, esthetics dental

Introduction:

Hypomineralized enamel defects are a frequent finding in the anterior sector and may severely affect our patients' appearance. For the treatment, there are several choices available, ranging from more cautious to more invasive. The degree of severity of the injury is a key element in choosing the best therapeutic solution.

Nowadays, dental aesthetics is a renowned area of dentistry. Many dental products have evolved over the years to assist patients get the flawless smiles they desire, while respecting the principles of prevention and minimally invasive treatments.

In this context, hypomineralized enamel defects are increasingly being treated using resin infiltration. A novel therapeutic option that can be completed in just one visit, saving the patient time, pain, and discomfort.

Case description:

A 30-year-old healthy male patient, presented to our department expressing dissatisfaction with the aesthetic appearance of his smile. The patient also described his discomfort to receive an invasive treatment. The clinical examination revealed the presence of opaque white spots on the 11; 21; and 22 on the incisal level. According to the clinical examination, the patient appears to have experienced trauma to their primary teeth, which may be the reason behind these white spots. The diagnosis was a hypomineralization of traumatic origin. (**Fig 1**)

Based on the results of the clinical examination and the patient's request, we opted for treatment with Icon® resin material (DMG, Hamburg, Germany).

Teeth were isolated using a rubber dam (**Fig 2**). The lesion was treated for two minutes with a 15% hydrochloric acid gel (**Fig 3**). The application has been done using a gentle pressure and a circular movement, to eliminate the most superficial enamel layer and keep the lesion body permeable for the entry of resin monomers. Then it was necessary to rinse for 30 seconds with water then dried, to remove any remaining product. Application of Icon®-

Dry left in place for 30 seconds and then dried (Fig 4). Consequently, the water enclosed in the enamel pores was evaporated, this phase evaluates the success of the erosion phase. For deeper lesions, etching was repeated for another 2 minutes. The last step was the application of tetraethylene glycol dimethacrylate to inject the resin into the tooth surface (Fig 5). It was then given five minutes to settle before curing. Dental floss was used to guarantee that there wasn't any surplus resin material between the teeth. Then it was light-cured for 40 seconds before finishing and polishing (Fig 6).



Figure 1: Preoperative situation showing numerous hypomineralization lesions



Figure 2: Rubber dam Isolation



Figure 3: Icon-Etch application



Figure 4: Icon-Dry application



Figure 5: Icon-Infiltrant application



Figure 6: Result after treatment. Improvement in this case was considered successful.

Discussion:

Infiltration with low-viscosity resins, which was originally intended to treat incipient carious lesions, has been refined and commercialized in Germany (Hamburg). The infiltrated resin system is characterized by its microinvasive nature, permitting treatment to fill, reinforce, and stabilize demineralization while preserving healthy tooth structure. In addition, it fits the prevention-restoration condition by masking opacities, using minimally invasive dental treatment.[1] Now the Infiltrants are increasingly being used to cover up enamel discolorations in hypomineralized teeth.[2]

This procedure is painless, does not require previous anesthesia, which provides a psychological advantage for the anxious patients, and the operating protocol allows one session treatment.[3]

The main convenient of this procedure is its durability and the color stability of the infiltrating resin. Omoto and al reported satisfactory and stable results even after 8 years [4]. Which is consistent with other cases that demonstrated color maintenance in anterior WSLs immediately after treatment, [4–6] and after a 4-years follow-up.[7]

In some circumstances, WSLs are deeply embedded in enamel, making resin infiltration ineffective. In such cases, a more invasive method such as micro-abrasion followed by resin infiltration could be necessary.[8]

One of the main benefits of Icon® is the ability to adhere to a surface that has been treated with erosion-infiltration.[9] In the case of deep lesions, where micro and macroabrasion procedures are required, residual infiltration is insufficient to aesthetically restore the substance defect. In these situations, it is preferred to implement a composite stratification in addition to infiltration.[10]

Conclusion:

When compared to conventional treatment, the superficial infiltration approach is a realistic minimally invasive option. However, it has some limitations, especially for deep or yellow lesions that require micro-abrasion or surface sanding first.

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