

## Aesthetic Rehabilitation in 11 And 21 Dental Pieces Affected by Enamel Hypoplasia: Case Report

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### Abstract

Dental aesthetic treatments allow to preserve healthy dental tissue and improve the patient's appearance, as well as their self-esteem, creating greater self-confidence. The objective of this research is to propose a lasting restorative aesthetic treatment in a patient suffering from enamel hypoplasia to improve the psychosocial impact that the patient describes suffering. Conclusion: Within the present investigation, restorative therapy for enamel hypoplasia was analyzed as an effective conservative and safe alternative. In addition to improving the psychosocial aspect that he described to the patient.

**Key Words:** enamel hypoplasia, aesthetic restoration, dental enamel.

### Introduction

Tooth enamel is considered a mostly inorganic tissue since it is composed of 98% hydroxyapatite crystals, it also has a matrix made up of water and organic matter (2%). It is considered the hardest tissue in the human body, and its forming cells are known as ameloblasts. (12)

The defects produced during the development of enamel depend on both genetic and environmental factors, which can be classified as follows:

- Defects in enamel quality, which are known as enamel hypomineralization. (3) (9)
- Defects in the amount of enamel, known as enamel hypoplasia, clinically will present pits, grooves in addition to changes in the coloration of the teeth. (3) (9)

This pathology is associated with children with chronic or acute malnutrition and children with a very low birth weight. Enamel hypoplasia presents risk factors that can trigger cosmetic defects, tooth decay and poor oral hygiene. (3) (13)

A study conducted in Colombia (a developing country) described that enamel hypoplasia has a prevalence of 6% in children aged 5-12 years and 7.3% in adolescents. (5)

Dental aesthetic treatments provide many benefits not only to improve the appearance of the patient, but also to improve the patient's self-esteem, since a beautiful smile is an excellent letter of introduction providing greater self-confidence. (3)

Patients suffering from enamel diseases suffer from social isolation, discomfort and distress, all this is attributed to their oral condition. (15)

The psychosocial impact is negative, as is their oral health. These authors comment on an article carried out in the United Kingdom to children between 7 and 16 years old who suffered from problems of their tooth enamel and who were subsequently treated with microabrasion with or without additional aesthetic restoration. The result showed that the shame they suffered before treatment decreased and they were happier and more confident. (15)

The aesthetic treatment is that it will improve the psychic, physical and social health of the patient, so the interactions between new materials and different restorative techniques will facilitate the reproduction of the details of the teeth, recovering their shape, size and color, and thus return the function of the same in the oral cavity. (3)

It is very important to have a wide knowledge about the materials and restorative techniques which will allow us to return the optical properties of the dental structures, translucency, opalescence and fluorescence. (1)

There are several alternatives regarding the treatment of enamel hypoplasia, the literature describes microabrasion, aesthetic restorations, or a combination of both techniques. (2) (7)

The microabrasion consists of a conservative treatment which allows the superficial removal of the affected enamel, eliminating alterations of its structures such as opacities, pigmentations and fluorosis, this procedure will be achieved by chemical abrasion of the tooth respecting the healthy enamel that surrounds it. (4)

Dr Walter Kane was the first to describe the microabrasion technique, for which he used 36% hydrochloric acid and heat, which resulted in the removal of brown stains from teeth. Years later Dr. McCloskey modified the technique by reducing the concentration of hydrochloric acid to 18% omitting the use of heat. Silvia et al. in 2001 concluded that this microabrasive technique is very effective and is clinically proven effective in the removal of surface defects of enamel. (4) (10)

To determine if microabrasion treatment is feasible, the maximum depth of enamel hypoplasia must be taken into account, whose depth ranges from 0.5-1mm, if this depth is exceeded the affected tooth must be restored with composite resin. (11)

Dental restorations with composite resin are an alternative to perform minimally invasive techniques, which together with a correct selection of adhesive materials and composite resin will allow to achieve the desired objective. The correct application of an adhesive protocol will favor the obtaining of imperceptible aesthetic results and longevity in terms of its clinical performance. (15)

The purpose of this study was to propose a restorative treatment that works in the long term to improve the functional and aesthetic part of the patient.

### **Methods:**

The present study is qualitative in nature since we observed the changes produced due to restorative treatment in teeth 11 and 21. Descriptive because a care protocol for performing aesthetic restorations in a patient suffering from enamel hypoplasia was narrated. Applied since it recovered aesthetics and lost function in these dental organs.

As inclusion criteria for the present research, a total edentulous patient was taken into account. In the present study, the result of the experimental design was considered as a dependent variable, recovering the aesthetics and function lost by the patient and as independent variables the two total prostheses made by the operator.

### **Results**

A 12-year-old female patient was treated in the private office "Dental Blue" since she presented aesthetic dissatisfaction in her anterior and upper teeth (Figure 1), clinically the middle and incisal third could be observed, in addition to brown spots both in the anterior and posterior pieces, added to this she presented loss of severe dental tissue corresponding to enamel and dentin, in pieces 13, 23, 33, 43, 16, 26, 36 and 46 (Figure 2, 3 and 4).

The medical record describes her main complaint: "I want to remove stains from my teeth to smile better"



**Figure 1** Front view of upper central incisors



**Figure 2** Presence of enamel hypoplasia in teeth 13 and 16

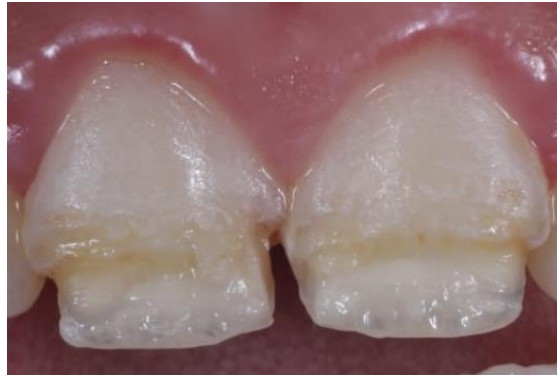


**Figure 3** Occlusal view of lower arcade



**Figure 4** Front view of the lower arcade

The anamnesis of the clinical case was carried out, beginning with an exhaustive visual clinical examination, observing the presence of yellow and brown spots, characteristic of enamel hypoplasia. In addition, the clinical examination confirmed the loss of tooth structure through the use of surface exploratory instruments in the affected area (Figure 5).



**Figure 5** Initial appearance of teeth 11 and 21

Within the anamnesis with the information obtained from his medical history, it was obtained as a result that the defect of the enamel of his teeth is not associated with any trauma or systemic disease.

Thermal pulp vitality tests were performed, using gutta-percha and Endoice, to which the patient presented a positive response despite the lesion present in her tooth enamel.

The determination of pulp vitality is an important factor when making a dental diagnosis, whose purpose is to obtain accurate information about the pulp state of the piece, which will allow us to make a correct treatment plan.<sup>15</sup>

For the restoration of the teeth, the IPS Empress Direct (Ivoclar Vivadent, Liechtsetein) and the Forma resin (Figure 6) were chosen, which have optical, aesthetic and mechanical properties that allow us to meet the objective of the treatment.<sup>6</sup>



**Figure 6** IPS Empress Direct and Forma nano hybrid composite resins

The optical properties allow to faithfully reproduce the different anatomical characteristics of the teeth, thanks to their realistic tones, the aesthetic characteristics will be observed when making a correct finish, polishing and brightness of the restoration. These resins are easy to handle, very suitable for complex situations, in addition to providing longevity to the restoration.<sup>15</sup>

For the selection of the color, all authors agree that this procedure should be performed in the absence of artificial light, using appropriate color guides, according to the composite that will be used, the taking of the color of the dentin will be made in the cervical third of the affected or neighboring piece, because in this structure the dentin is thicker, saturated, and therefore the amount of enamel is lower, while the taking of enamel color should be done in the middle third. (2)

Absolute isolation of the operative field was performed (Figure 7), which is an essential method in restorative dentistry, due to its multiple benefits, among which we have: avoid aspiration of instruments, soft tissue retraction,

tongue control, decreases the risk of contamination of the work area with blood or saliva, favors adhesion, Improves the lighting of the work area, among other benefits. (8)



**Figure 7** Absolute isolation

Subsequently, prophylaxis was performed with distilled water, prophylactic paste without fluoride and Robinson's brush on the surface that presented the lesion.

We continue with the preparation of a conservative cavity using diamond burs of coarse and fine grain, which allow a preparation to be made in a precise way and delimited to the affected area, preserving healthy tooth enamel. It should be noted that burs that present an adequate state and cut should be used, in this way we will ensure that the dental surface does not lose its initial moisture, thus avoiding future injuries or affecting the dental pulp by overheating if uncut or worn instruments are used. (11)

Later we begin to fill the cavity with the aforementioned resin directly on the affected piece molding in such a way that we reproduce the anatomy of the tooth using the instruments selected for this work whether brushes, guttaperracks among others and hardening it with ultraviolet light (photocuring lamp). (Figure 8).



**Figure 8** Brushes and instruments used for handling composite resin

Once the aesthetic restoration was carried out, they were finished and polished, for which soflex discs, brush, felt and polishing paste were used (Figure 9).

To reduce frictional heat, a thermal insulator such as petroleum jelly and water should be used. With the first disc whose granulation must be thick, we proceed to eliminate excess material, using it between 20-15 seconds by unidirectional movements, preventing the metal inner edge from coming into contact with the restoration since it could scratch it, therefore, the pressure of the disc must be soft. (2) (15)

The next disc must be of medium granulation, which will give the restoration the final contouring, said disc is used by making unidirectional movements from cervical to incisal always remembering to exert light pressure. (2)

The third disc corresponds to fine granulation, which gives the finish to the resin, making the same movements mentioned above, and the last disc corresponds to an ultrafine granulation that will provide the final polish to our restoration.

Later we proceed to complement the polishing of the restoration using a goat hair brush at low speed for 20 seconds for all the restoration performed.

Once this step is completed, we proceed to apply polishing paste using a felt for a period of 20 seconds, which is used first dry and then moistening the surface to be polished. In this way we conclude the polishing and finishing of the restoration and use a prophylactic brush to remove residues.

In this way we achieve the established objective, obtaining an aesthetic and functional restoration.



**Figure 9** Polishing kit

The results were favorable, an adequate morphology was achieved, meeting the needs of the patient, returning the aesthetics and function of the teeth affected with dental hypoplasia, demonstrating that the composite resin is a suitable material to reproduce aesthetic effects similar to those of the dental structure.



**Figure 10** Final result of the restorative treatment

### **Discussion**

In 2018, a study conducted in Southwest Nigeria determined that enamel hypoplasias have no negative effects on the quality of life of infants' oral health. In contradiction to this Abedulnaser et al. In 2019 he describes hypoplasia as causing profound effects on the health and well-being of the child until his old age. (7) (14)

Acosta et al. in 2017 they mentioned microabrasion as an excellent therapeutic of hypoplasia, however, he also comments that there are certain with greater pigmentation or loss of tooth structure, where other types of treatments are essential, limiting this, Abedulnaser in 2019 mentioned that it is necessary to protect tooth enamel to prevent its loss. Ramírez Barrantes in 2019 proved with his study that composite resin is an optimal material to restore aesthetic effects very similar to those of natural teeth. (11) (14)

## Conclusions

- Within the present research, restorative therapy for enamel hypoplasia was analyzed, providing an effective conservative and safe alternative.
- In order to improve the psychosocial aspect described by the patient and eliminate her embarrassment when smiling, the treatment described is effective in fulfilling the proposed objective.

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