

AMELOGENESIS IMPERFECTA AND THE DENTAL ESTHETICS – CLINICAL ASPECTS

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Abstract: The article discusses the clinical case of a patient with hypocalcified type of amelogenesis imperfecta and describes in detail the odontal lesions, both clinically and radiologically, while offering a modern and biocompatible method of treatment. Due to the friability of the dental enamel in such cases of amelogenesis imperfecta, the crown restoration with composite filling is just a short term alternative. More complex restorations are needed, such as micro prosthetics or bridges made of biocompatible materials able to confer not only stability and durability in time, but most important dental esthetics.

INTRODUCTION

Amelogenesis imperfecta is a hereditary dysplasia that affects the structure and aspect of the dental enamel. It is a clinical condition of abnormal dental development that causes the tooth to be smaller, with uneven structure and colour, spotted and with atypical cavities, and also prone to breakage. The enamel defects, however, vary from one individual to another and can affect both temporary and permanent dentition.(1,2,3,4,5)

The latest research establishes 14 clinical forms of amelogenesis imperfecta. These forms can be distinguished according to their manifestations, clinical aspect, and the pattern of genetic inheritance. Although a primarily hereditary disorder, amelogenesis imperfecta may occur as de novo separate entity, or as per primam mutation in the dental enamel, or it may occur within the frame of general syndromes or diseases affecting the entire organism. Three main categories of amelogenesis imperfecta are known: hypoplastic, hypomaturation, hypocalcified (hypomineralization) when the tooth mineral substratum is 40% lower than the normal level.(6,7)

The precise incidence of amelogenesis imperfecta is difficult to establish. However, researchers estimate a frequency of 1 to 700 individuals in Sweden and 1 to 14 000 individuals in the United States of America. Genetically speaking, the mutations of the genes AMELX, ENAM, MMP20 and FAM83H are those which trigger the occurrence of amelogenesis. These particular genes induce the production of essential proteins in the structure of the dental enamel; hence the disruption in the protein metabolism at this level leads to amelogenesis imperfect.(8,9,10)

CASE REPORT

33 year-old patient, N.M., came to the dental clinic for a consultation in order to restore the physiognomic function, but also with complaint of sporadic pain in the hemi-arcade 2. A panoramic radiography was performed for a complete and complex examination, followed by a clinical and radiological evaluation of the case (figures no. 1 and 2).

The panoramic radiography reveals the presence of large carious lesions, with an increased volume of the pulp chamber, as well as a history of incorrect previous dental

restorations with secondary marginal cavities. Multiple carious lesions, occlusal and cervical, on all the teeth of the upper arcade and on the sides of the lower arcade could be noticed. The 3.6 molar presented a relapse after apical resection with local edema and a rich symptomatology specific for an acute inflammatory process.

Figure no. 1. Radiologic image at the beginning of treatment



The intraoral clinical examination reveals the lack of dental substance, with friable enamel, multiple carious lesions, crown obturations which have lost the marginal closure and lead to the apparition of marginal carious lesions. The enamel colour is uneven, the cervical lesions tend to expand, and the lack of hard tooth substance is obvious in every tooth, especially on the upper arcade. The patient complains of pain caused by hot or cold food; the teeth are extremely sensitive even when touched with the periodontal probe. This increased tooth sensitivity caused the patient to neglect the oral hygiene, which explains the presence of tartar and muco-bacterial plaque on the tooth, as well as the spontaneous gum bleeding during brushing or probe touching. The most affected from a structural point of view are the teeth of the upper jaw (figure no. 2).

Figure no. 2. Initial dental status



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The clinical and radiological examination indicated the diagnosis of hypocalcified amelogenesis imperfect as described in literature.(11,12,13,14) Given the situation and the patient's desire to eliminate the dental outbreaks and to regain her smile, we have decided upon the following treatment: sanitation, removal of old fillings, removal of the infection caused by the lower left first molar, completion of the endodontic treatments and the crown restoration by means of DCR or glass fiber armature where the crown of the tooth was completely destroyed. Due to the massive crown destruction and enamel friability we have decided together with the patient to begin complete oral rehabilitation by means of ceramic micro prosthetics in order to restore the functions of the dento-maxillary apparatus. Since ceramics is a biocompatible material with high quality properties in terms of aesthetics, marginal closure, colour stability and dimension over time, we came to the conclusion that this would be the best option in the given case. Also, since the teeth have a good periodontal implantation, the option of restoration by means of micro prosthetics instead of dental bridge would be more bio-adaptable and more comfortable for the patient in the process of hygiene

Figures no. 3 and 4 show the images of the crown preparations with threshold in order to make the impression of the teeth and the radiologic image with the completed endodontic treatments.

Figure no. 3. Threshold preparations of prosthetic abutment – images before imprinting



Figure no. 4. Radiologic image at the end of the odontal and endodontic treatment



On the radiologic image it can be observed the extraction place 3.6. After 4 months, a tooth implant will be inserted.

The next figures, no. 4 and 5 reveal the micro prosthetics on the gypsum model and their adjustment on the preparation thresholds of the prosthetic abutments. Micro

prosthetic restoration provides enough space for the interdental papilla.

Figure no. 5. Ceramic micro prosthetics on the gypsum model



Figure no. 6. The clinical intraoral occlusal aspect of prosthetic restoration through micro prosthetics



The micro prosthetics were initially temporary cemented, with occlusal function, and after an adjustment period for the patient and after the periodontal healing, the new crowns have been permanently cemented.

Figure no. 7. Clinical aspect at the end of oral restoration



The above image reveals the special aesthetic aspect of such a prosthetic restoration. The patient proved to be content with the result at the end of the treatment. Due to social-economic factors, after a period of time there will follow a restoration process for the lower arcades.

CONCLUSIONS

- Oral restoration of patients with amelogenesis imperfect must be based on bio-compatibility criterion.
- From an aesthetic point of view, amelogenesis brings forth a series of deficiencies, which can be repaired only through

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- extended rehabilitation.
- The insufficiency of dental structure increases the porosity of the remained enamel and underlying dentine, in such a way that the adhesiveness of muco-bacterial plaque is higher.
- The lack of thorough oral hygiene of patients with amelogenesis over the course of time leads to serious dental problems.
- Amelogenesis imperfecta enhances both changes in the structure of enamel, as well as in the dental colour and form, turning into a serious social problem over time.

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