Full Mouth Rehabilitation of a Patient with Amelogenesis Imperfecta: A Case Report

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Abstract:
Amelogenesis imperfecta is a real problem from both functional and esthetic points of view. An esthetic treatment may improve the quality of life and strengthen the self-esteem. This clinical report demonstrates the oral rehabilitation of a 26-year-old woman diagnosed with amelogenesis imperfecta. The aim of this interdisciplinary treatment was to restore esthetics and at the same time, to improve masticatory function. The expectations in regard to a new esthetic pattern of the patient were successfully reached by proper alignment of gingivo-cervical line, crown lengthening, and placing all-ceramic crowns from molar to molar in both maxillary and mandibular arch, 28 crowns in total. A plan to improve her low self-esteem, because of her poor appearance, was accomplished with an interdisciplinary approach in a short period of time. The full mouth rehabilitation eliminated tooth sensitivity, improved esthetics, and function restoration.

Key Words: Amelogenesis imperfecta, ceramic crowns, full mouth rehabilitation, function restoration, self-esteem

Introduction
The enamel is the most mineralized structure from the human body, which presents 85% of its volume occupied by hydroxyapatite.¹² Amelogenesis imperfecta is a hereditary dysplasia that affects the enamel formation during its last stage. In general, this tooth abnormalities, which affect the genome of the individual, is a hereditary disorder that affects both deciduous and permanent teeth.³⁴ This abnormality can be related to autosomal or X-linked, dominant, or recessive models.¹⁰ Moreover, it is known that the gene responsible to codify the most abundant protein of enamel, amelogenin, is related to the occurrence of hypomineralized enamel.¹¹,¹² In addition to the progress on the investigation of this teeth-related disease, several aspects and pathways regarding the physiopathology of amelogenesis imperfecta still need elucidation.

The clinical classification of this disease can be divided basically into three categories such as hypoplastic, where the enamel has a reduced thickness, several stains, but normally calcified and it represents 60-73% of the cases; hypocalcified, where the enamel is soft and can be easily detached from the teeth surface and represents 7% of the cases; and the last one is the hypomature, where the teeth present a yellow to brownish shade, normal thickness, but reduced hardness and represents 40% of reported cases.¹³,¹⁴ Depending on the population, the prevalence range of amelogenesis imperfecta is 1 in 718 to 1 in 14,000.¹¹ The clinical manifestations are represented by a variety of symptoms that compromises extensive loss of tooth tissue, high sensitivity during feeding and even speaking, short clinical crowns because of the low hardness and excessive attrition, normal or tight proximal contacts, higher roughness, and crown staining.⁹¹⁶ The management of amelogenesis depends on the patient age; direct restorations are recommended for children and teenagers because this technic is minimally invasive and the adjustments can be easily done with tooth eruption. For adults, indirect restorations have a more favorable prognostic. In addition, the treatment is complex and takes a substantial amount of time. The purpose of this study was to perform a full mouth oral rehabilitation on a patient with amelogenesis imperfecta.

Case Report
A 26-year-old female patient reported to our clinic with a complaint of stained teeth, generalized sensitivity, difficult chewing, and a very low self-esteem because of her poor appearance. She also reported her frustration with the dentistry field, because for the past 15 years, she was looking for treatment and no one was able to present the treatment plan and solve her case.

Her past medical history was non-contributory with no history of disturbances during the eruption. She had been avoiding
hard food, and since she was 15-year-old she’s been caries free. During the intraoral examination, it was observed that she had a complement of teeth, but with reduced crown size, reduced or absence of enamel, and presented a rough surface aspect with a yellowish brown color (Figure 1a). Moreover, the periodontal examination revealed the absence of gingivitis, but calculus deposition, and unsatisfactory oral hygiene. The radiographic investigation revealed generalized loss of enamel (Figure 1b). The proper alignment of gingivo-cervical line and crown lengthening were provided with periodontal treatment (Figure 2), this procedure was performed under sedation in our operation room.

Maxillary and mandibular complete-arch impressions were made using polydimethylsiloxane (Clonage, DFL). Diagnostic casts were fabricated from Type III dental stone and mounted on a semi-adjustable articulator and a centric relation record. A diagnostic wax up was done (Figure 3). A putty index of this wax up was fabricated which was used for the fabrication of the temporary restorations.

The full mouth oral rehabilitation was planned for the patient where 28 teeth were prepared for crowns (Figure 4a). Provisional restorations were fabricated with self-cure acrylic resin (Duralay, Reliance Dental Manufacturing Co.), shade 66, using the putty index (Figure 4b). They were cemented with zinc oxide-non-eugenol (Temp-Bond;
Kerr). For definitive impressions of the prepared teeth, we have used a polyvinyl siloxane impression material (Putty and Light Elite HD; Zhermack) by a two-stage impression technique (Figure 5a). The working cast was mounted onto the articulator using interocclusal records (Pattern Resin; GC America) (Figure 5b). All-ceramic crowns were placed on the anterior (feldspathic ceramic) and posterior (lithium disilicate) teeth to reduce sensitivity and improve esthetics with function (Figure 6). The crowns were cemented with dual-polymerizing resin cement (multilink implant; Ivoclar Vivadent) (Figure 7a and b).

In regard to the success of this clinical report, the most exciting outcomes are that we were able to achieve the improvement of esthetic appearance with minimally invasive prosthetic approach (Figure 8), reduce tooth sensitivity, and the resolution of a potentially harmful psychosocial condition in record time, only four clinical sections. The patient remained satisfied during the 12 months follow-up examination.

**Conclusion**

In this clinical report, it was described the oral rehabilitation of a woman affected by amelogenesis imperfecta. A plan to improve her low self-esteem, because of her poor appearance, was accomplished with an interdisciplinary approach. After crowns lengthening of the anterior and posterior teeth, the prosthetic treatment included full mouth rehabilitation all-ceramic fixed crowns to eliminate tooth sensitivity, improve esthetics, and function restoration.

**References**

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