







Aesthetic Rehabilitation of a Preschool Patient with Hypoplasia Using Acetate Crowns: A Case Report

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Abstract: Introduction: Enamel hypoplasia consists on the incomplete formation of the organic matrix of the enamel. It is characterized by grooves and loss of structure with rounded edges, which can compromise aesthetics and interfere on the form and function. Treatments can vary between microabrasion, restorations or single crowns. Among the types of treatment for more severe hypoplasia, acetate, celluloid or polyester crowns stand out due to their low cost, good longevity and easy handling, allowing to optimize clinical time and obtain satisfactory aesthetics. **Goal:** This case aims to rehabilitate a 3-year-old preschooler with hypoplasia in her upper central incisors using acetate crowns, seeking to reduce clinical time and bring lasting and satisfactory aesthetic results. **Case report:** Preschool patient, female, 3 years old, complete deciduous dentition, without malocclusions and with enamel hypoplasia on the incisal edge of the upper central incisors. The rehabilitation treatment of choice was direct restorations with the aid of acetate crowns. Conditioning was carried out with 37% phosphoric acid on the tooth surface, followed by the application of adhesive. To fill the crowns, composite resin was used, inserted into the acetate molds in small increments to reduce polymerization contraction, and subsequently light-cured for one minute on each face. After a 1-year follow-up, they maintained good adaptation, smoothness and satisfactory aesthetic results. **Conclusion:** Acetate crowns are a good option for the aesthetic rehabilitation of anterior teeth with hypoplasia. They have satisfactory aesthetic results, low cost, reduced clinical time and appropriate longevity.

Key words: Enamel Hypoplasia, Enamel Development Defects, Oral Rehabilitation, Preschool, Deciduous Teeth.

Rehabilitación estética de paciente preescolar con hipoplasia utilizando coronas de acetato: reporte de caso

Resumen: Introducción: La hipoplasia del esmalte consiste en la formación incompleta de la matriz del esmalte. Se caracteriza por surcos y pérdida de estructura, que pueden comprometer la estética, interferir con la forma y la función. Los tratamientos pueden variar entre microabrasión, restauraciones o coronas individuales. Dentre los tipos de tratamientos para hipoplasia se destacan las coronas de acetato, celuloide o poliéster por su bajo costo, buena longevidad y fácil manejo, logrando optimizar el tiempo clínico y obtener estética satisfactoria. **Objetivo:** Este caso tiene como objetivo rehabilitar a una niña de 3 años, preescolar con hipoplasia en sus incisivos centrales superiores mediante el uso de coronas de acetato, buscando reducir el tiempo clínico y brindar resultados estéticos satisfactorios. **Reporte de caso:** Paciente preescolar, femenino, 3 años, dentición temporal completa, sin maloclusiones y con hipoplasia en el borde incisal de los incisivos centrales superiores. El tratamiento rehabilitador de elección ha sido las restauraciones directas con ayuda de coronas de acetato. El acondicionamiento se realizó con ácido fosfórico al 37%, seguido de la aplicación de adhesivo. Para el relleno de las coronas se utilizó resina compuesta, insertada en los moldes de acetato en pequeños incrementos para reducir la contracción de polimerización, y posteriormente fotopolimerizada durante un minuto. Tras 1 año de seguimiento mantuvieron buena adaptación, tersura y resultados estéticos satisfactorios. **Conclusión:** Las coronas de acetato son una buena opción para la rehabilitación estética de dientes anteriores con hipoplasia. Tienen resultados estéticos satisfactorios, bajo costo, tiempo clínico reducido y longevidad adecuada.

Palabras clave: Hipoplasia del Esmalte, Defecto del Esmalte, Rehabilitación Estética, Preescolar, Dentición temporal.

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Reabilitação estética de paciente pré-escolar com hipoplasia utilizando coroas de acetato: relato de caso

Resumo: **Introdução:** A hipoplasia de esmalte consiste na formação incompleta da matriz orgânica do esmalte. Caracteriza-se por ranhuras e perda de estrutura com bordas arredondadas, podendo comprometer a estética e interferir na forma e função. Os tratamentos podem variar entre microabrasão, restaurações ou coroas unitárias. Dentre os tipos de tratamento para hipoplasia mais severa, destacam-se as coroas de acetato, celulóide ou poliéster devido ao seu baixo custo, boa longevidade e fácil manuseio, permitindo otimizar o tempo clínico e obter estética satisfatória. **Objetivo:** Este caso visa reabilitar uma pré-escolar de 3 anos com hipoplasia em incisivos centrais superiores utilizando coroas de acetato buscando reduzir o tempo clínico e trazer resultados estéticos duradouros e satisfatórios. **Relato de caso:** Paciente pré-escolar, sexo feminino, 3 anos, dentição decídua completa, sem má-oclusões e com hipoplasia de esmalte na borda incisal dos incisivos centrais superiores. O tratamento reabilitador de escolha foram restaurações diretas com auxílio de coroas de acetato. Foi realizado condicionamento com ácido fosfórico 37% na superfície do dente, seguido da aplicação de adesivo. Para o preenchimento das coroas foi utilizada resina composta inserida nos moldes de acetato em pequenos incrementos para diminuir a contração de polimerização, e posteriormente fotopolimerizada por um minuto em cada face. Após acompanhamento de 1 ano, mantiveram boa adaptação, lisura e resultado estético satisfatório. **Conclusão:** As coroas de acetato são uma boa opção para a reabilitação estética de dentes anteriores com hipoplasia. Possuem resultado estético satisfatório, baixo custo, redução do tempo clínico e longevidade apropriada.

Palavras-chave: Hipoplasia do Esmalte Dentário; Defeitos de Desenvolvimento do Esmalte Dentário; Reabilitação Bucal; Pré-Escolar; Dente Decíduo.

Introduction

Developmental defects of enamel (DDEs) arise as a result of disturbances to the mineralization process and to the hard tissue matrix during the stages of amelogenesis¹. The presentation and severity of these defects depend on the stage of amelogenesis at which the disturbance occurs, as well as the extent and duration of the disturbance². If the disturbance occurs during the enamel matrix secretion phase, there will be a failure in mineral secretion and, consequently, a defect in the amount of mineral present ("quantitative defect" or "hypoplasia")³.

The etiological factors of hypoplasia include nutritional deficiencies, trauma, infections, low birth weight, among others². The prevalence of DDEs in primary dentition is not as well documented as in permanent dentition (Salanitri, S), and may range from 10% (Casanova-Rosado, AJ) to 49% (Montero, MJ). Patients with MIH (Molar

Incisor Hypomineralization) may show a higher prevalence of hypoplasia⁴.

The hypoplastic enamel presents reduced thickness. Clinically, grooves and loss of structure with rounded edges can be observed; such structural loss may be mistaken for physiological tooth wear, post-eruptive breakdown, or erosion.⁵

The need for treatment of DDEs in the global population is considerable⁶. For successful rehabilitation of teeth affected by DDEs, early diagnosis and preventive consultations are essential². Due to the presence of retentive and irregular areas that facilitate the accumulation of plaque and cariogenic bacteria, the risk of developing carious lesions is high in teeth with enamel hypoplasia⁷. Additionally, affected teeth may have compromised aesthetics, which can increase anxiety and social embarrassment in children⁸. As a restorative measure, materials such as composite resins—which

have the ability to adhere effectively to both dentin and enamel—are recommended for teeth affected by DDEs⁹.

Case report

Patient (GDC), a preschool-aged female, 3 years old, was referred to the Enamel Defects Clinic of the Department of Pediatric Dentistry at FOU SP for her first dental appointment, accompanied by her mother. The patient's history was obtained through a detailed anamnesis. Regarding socioeconomic data, the mother reported having completed high school, while the father had completed elementary school (1st to 5th grade). The family's monthly income is R\$3,000.00, and they do not receive benefits from the Bolsa Família program. Concerning the prenatal history, the mother had more than six obstetric consultations and reported experiencing gestational hypertension, urinary tract infection, HELLP syndrome, and preeclampsia during pregnancy. As for the child's medical and dental history, she had a throat infection before the age of one, was exclusively breastfed until six months of age, used anti-inflammatory and analgesic medications after her first year, and had never previously been to a dentist. The patient uses fluoridated toothpaste, an extra-soft toothbrush, and dental floss, and received daily assistance from a caregiver during oral hygiene, which was performed three times a day. However, the family reported never having received any oral hygiene guidance.

Upon clinical examination, it was observed that the upper central incisors exhibited loss of structure in the incisal region.

The loss of structure presented with well-defined, rounded edges, unlike the irregular edges more commonly found in enamel fractures, which was the decisive factor for the diagnosis of hypoplasia.

At the end of the anamnesis and clinical examination, the mother received guidance about the diagnosis, treatment plan, and the use of images for teaching and research purposes, and signed the Informed Consent Form (ICF).

Additionally, during the first appointment, the Simplified Oral Hygiene Index (OHI-S)¹⁰ was performed, plaque disclosure was conducted, oral hygiene instruction was given using large models, and prophylaxis was carried out with a Robinson brush, pumice stone, and water. The patient presented satisfactory oral hygiene, without gingival bleeding or any symptoms or aesthetic complaints. At the end of the appointment, recommendations were reinforced for a less cariogenic and erosive diet. For oral hygiene, the use of fluoridated toothpaste with at least 1,000 ppm fluoride was encouraged.

After one week, the patient returned to the clinic to undergo the restorative procedure. During this appointment, photographs of the initial clinical condition were taken, and direct composite resin restorations with acetate crowns were performed on teeth 51 and 61. At first, preliminary photographs were taken (Figure 1-A), and the acetate crowns were tried on the teeth (Figure 1-B). For enamel conditioning (Figure 1-C), 37% phosphoric acid was applied for 8 seconds on enamel and 7 seconds on dentin (totaling 15 seconds of acid etching on the margins). After rinsing

with cotton (Figure 1-D) and drying the tooth surface, Single Bond Adhesive – 3M was applied (Figure 1-E), air-dried for 5 seconds (Figure 1-F), and light-cured for 10 seconds (Figure 1-G). Nanohybrid Composite Resin Opallis 50.5 FGM was used to fill the crowns, which were light-cured with a Valo light-curing unit for 60 seconds on each surface (palatal and buccal). Finally, the acetate crown was removed with dental tweezers (Figure 1-H). The final result, after polishing, was photographed (Figure 1-I).

After one week, the patient returned to the clinic for finishing and polishing using a multilaminated diamond bur 3118F (FG American Burrs) (Figure 2) and Sof-Lex sanding discs (3M) (Figure 3). At the 3-month follow-up appointment, professional prophylaxis was performed

using a Robinson brush, pumice, and water. As a preventive measure, fluoride varnish was applied to all teeth. It was observed that the crowns were well adapted and showed no plaque accumulation.



Figure 2. Use of multilaminated diamond bur (reference 3118F) for polishing of acetate crowns on teeth 51 and 61.



Figure 3. Use of Sof-Lex sanding disc for polishing of acetate crowns on teeth 51 and 61.



Figure 1. Clinical sequence of acetate crown confeccion on teeth 51 and 61.



Figure 4. Follow up after 1 year.

Discussion

In the light of the reported complaint and considering the various types of treatments suggested in the literature for DDEs^{11,12,13}, as well as the patient's age and the mother's expectations, conservative composite resin restorations using acetate molds from the TDV brand were chosen. This decision took into account the principles of contemporary minimally invasive aesthetic dentistry, which aims to preserve healthy tooth structure without causing additional wear during the rehabilitation process, while restoring aesthetics, function, and patient well-being. It should be emphasized that the concerns and expectations of the patient and their family must always be respected, given that the compromise of a smile can lead to psychological and behavioral changes in the patient.

Considering minimally invasive dentistry, in which conservative treatments should be prioritized, the direct restorative technique is regarded as simple, effective, low-cost, with good durability and reduced clinical time. It also allows for repairs and preservation of tooth structure in the restoration of aesthetics, form, and function¹⁴.

Among invasive procedures, the use of acetate crowns is considered a minimally invasive alternative, as this procedure does not require tooth preparation¹⁵. This corroborates the claims made by authors who indicate that, although there is no direct relationship between carious lesions and enamel hypoplasia, caries that develop in teeth with DDEs may progress more rapidly¹⁶.

Special attention was also given to the choice of restorative material used, as

opting for composite resin is expected to provide greater polishing capability and aesthetics¹⁵. Thus, the chosen treatment allowed for a smoother surface with lower susceptibility to plaque accumulation and consequently a reduced risk of carious lesion development.

Another important aspect to consider is that the dentist should motivate patients to maintain good oral hygiene during and after the treatment of enamel hypoplasia. Parents or guardians should be informed about the importance of regular follow-up appointments. Three months after the patient's treatment, the restorations were observed to be satisfactory, and the mother reported a significant improvement in the child's self-esteem, which notably reflected in her social behavior.

Conclusion

The use of the direct restoration technique with acetate crown molds for the rehabilitation of primary teeth with enamel hypoplasia proved to be effective. The success of the treatment was made possible by an accurate diagnosis, the correct indication and execution of the technique, and the use of high-quality restorative materials, which allowed for the preservation of healthy tooth structure and the aesthetic and functional restoration of the affected teeth, ensuring patient satisfaction.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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