

Esthetic Rehabilitation of Anterior Teeth Affected By Enamel Hypoplasia: Two Case Reports

MİNE HİPOPLAZİLİ ANTERİOR DİŞLERİN ESTETİK REHABİLİTASYONU: İKİ VAKA RAPORU

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Abstract

Objective: Alterations during tooth structure formation are known to severely compromise esthetics especially in anterior region. Enamel hypoplasia is a common problem that represents this kind of situation. Although the affected teeth may not be particularly susceptible to caries, sensitivity may be present and moreover, patients may experience psychosocial problems due to their appearance. Such cases must urgently be treated with an appropriate treatment modality.

Case Report: This report presents esthetic rehabilitation of 2 young adult (male and female) enamel hypoplasia patients with direct laminate veneers and discusses different treatment modalities.

Conclusion: Treatment with laminate veneers satisfied the aesthetic requirements without sacrificing the tooth structure.

Key Words: Enamel hypoplasia; direct laminate veneers; dentin hypersensitivity

Türkiye Klinikleri J Dental Sci 2006, 12:99-103

Özet

Amaç: Ön dişlerin gelişimi esnasında meydana gelen düzensizlikler, sıkça estetik problemlere sebep olurlar. Mine hipoplazisi, bu durumu temsil eden genel bir tablodur. Etkilenen dişlerde her ne kadar çürük riskinin önemli ölçüde arttığı söylenemese de bu dişler, hassasiyete ve daha da önemlisi, görünümleri itibarıyla hastaların psiko-sosyal problemler yaşamasına sebep olabilmektedir. Bu durumun zaman geçirmeden uygun bir şekilde tedavi edilmesi gerekmektedir.

Olgu Sunumu: Bu 2 vakada, kliniğimize başvuran mine hipoplazili 2 genç hastanın (bay ve bayan) direkt laminate veneer uygulamasıyla estetik rehabilitasyonu anlatılmakta ve farklı tedavi seçenekleri tartışılmaktadır.

Sonuç: Laminate veneer uygulaması sonucunda, diş dokusu korunarak, kabul edilebilir estetiğe ulaşıldı.

Anahtar Kelimeler: Mine hipoplazisi; direkt laminate veneerler; dentin hassasiyeti

The enamel hypoplasia is an individual ectodermal disorder, related to alterations in the organic enamel matrix, which can cause white flecks, narrow horizontal bands, lines of pits, grooves, and discolorations of the teeth varying from yellow to dark brown.^{1,2} This pathology has a heterogeneous distribution all over the

world and can occur only during the enamel formation of teeth; consequently, if enamel tissue has completed its calcification, not any defect can occur.² The etiology of the enamel hypoplasia can be hereditary; related to autosomal dominant, recessive or X-linked genes,³ and acquired; involving nutritional deficiencies, exanthematous diseases, congenital syphilis, hypocalcaemia, inflammation or trauma during dental development, chemical substances, and idiopathic factors.^{2,4}

Apart from caries and sensitivity that may be present at hypoplastic teeth, patients' negatively affected facial appearance seems to be the more important reason for the dental rehabilitation of these cases.^{5,6}

Geliş Tarihi/Received: 24.06.2005 Kabul Tarihi/Accepted: 06.06.2006

This report took place as a poster presentation at The 1st International Dental Symposium of Süleyman Demirel University Dental Faculty held on 28-30 May 2004 in Isparta.

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This 2-case-report presents the esthetic rehabilitation of 2 enamel hypoplasia patients using direct laminate veneer technique.

Case Reports

Two enamel hypoplasia patients were referred to the Clinic of Prosthodontics of Dicle University Faculty of Dentistry for prosthodontic examination, with an interval of a few months. Both cases had anterior teeth with severely impaired esthetics and expressed lowered self-confidence. Mild tooth sensitivity with little dental caries in some teeth was also present. The first patient was a 23-year-old man whose all anterior teeth except maxillary lateral incisors were hypoplastic (Figures 1a, 1b). Maxillary lateral incisors were asymmetric and especially the central incisors were much more affected by the pathology. The 2nd case was a 28-

year-old woman who had all of her anterior teeth affected by enamel hypoplasia (Figures 2a, 2b). In this case canines were much more affected by the disease. The patients' history revealed hyperthermia periods suffered between the ages of 2 to 6. Therefore, the etiology of the existing pathology in both patients was associated with fever due to bacterial infection suffered during enamel formation.

Patients were informed about the etiology of their complaint and treatment options were evaluated. Both of the patients preferred a minimally invasive and esthetic treatment modality. The treating team decided to restore the affected anterior teeth with the direct laminate veneering technique using an adhesive bonding system.

Anterior and lateral guidances were determined in each case. Caries and darkened dentin that may negatively affect the final esthetic ap-



Figures 1a, 1b. Initial intra oral frontal view of the 1st patient.



Figures 2a, 2b. Initial intra oral frontal view of the 2nd patient.

pearance of the rehabilitation were removed, and suitable composite resin colour was determined using the shade guides at the bottom of each composite resin tube present in the composite resin kit (Ecusit System; DMG Chemisch, Hamburg, Germany) used. A small bevel was prepared with diamond bur (Diatech 806(257)-020 fine grind-Diamond FQ; Coltène / Whaledent AG, Altstätten, Switzerland) to conceal the union line between the tooth structure and the composite resin. Total acid-etching was performed with 35% phosphoric acid (3M Scotchbond Multi-Purpose Etchant; 3M ESPE, St. Paul, USA) for 10 seconds in dentin and 30 seconds in enamel. The teeth were rinsed with water spray for 10-15 seconds and the dentin was dried with hydrophilic cotton pellets. Primer (3M Scotchbond Multi-Purpose Primer; 3M ESPE, St. Paul, USA) was applied on all surfaces and spread-dried with an air spray for 20 seconds. Bonding agent (3M Scotchbond Multi-Purpose Adhesive; 3M ESPE, St. Paul, USA) was applied and polymerized with a light source (Polofil Lux, Halogen light; VOCO, Cuxhaven, Germany) for 10 seconds and increments of hybrid composite resin (Ecusit System; DMG Chemisch) were placed and light-polymerized for 40 seconds. The teeth were rehabilitated two-by-two. Before final finishing and polishing, an analysis of the excursive movements was performed trying to reproduce the original anterior and lateral guidance determined at the beginning of the treatment. Finishing and polishing was accomplished with fine and ultra fine diamond burs (Diamond Bur 859L(167)-014 fine grind-FG; and Diamond Bur 859L(167)-010 ultrafine grind-FG; NTI-Kahla GmbH, Kahla, Germany) and composite rubber polishing burs (NTI Macro Comp 243 523-050; and NTI Micro Comp 243 516-050; NTI-Kahla GmbH, Kahla, Germany).

At the end of the treatment (Figures 3a, 3b and 4a, 4b), patients expressed their satisfaction.

Discussion

The enamel hypoplasia causes esthetic problems on anterior teeth resulting to psychologic defects in young patients.^{5,6} This makes the prob-



Figures 3a, 3b. Final intra oral frontal view of the 1st patient.

lem urgent from psycho-social point of view. A great number of treatment modalities are known for the treatment of anterior teeth affected by the enamel hypoplasia.^{7,8} Tooth bleaching and microabrasion are noninvasive steps in achieving acceptable results in the removal of enamel stains and minor surface defects. When there is loss of tooth structure associated with defects, the use of composite resins produces excellent esthetic results and stable clinical longevity. In the most severe cases, porcelain veneers appear to be the best option.⁷ However, conservative restorative dentistry with directly applied restorations always should be the primary opinion among all of the armamentarium of conservative esthetic techniques.⁸ Although noninvasive, vital bleaching brings risks for pulpal damage and gingival irritation, and can take up to 6



Figures 4a, 4b. Final intra oral frontal view of the 2nd patient.

weeks of application until the final result is achieved.^{9,10} Also, from esthetic point of view, it is difficult to predict the prognosis of vital bleaching treatment. Porcelain laminate veneers are treatment modality with unique esthetics. But, they are highly technique sensitive, time consuming and still expensive treatment of choice.^{11,12} Direct composite laminate restorations have been used for years and proved to be esthetically and clinically acceptable.^{10,13,14} They can be used in enamel hypoplasia cases as temporary as well as permanent treatment modality, can be easily repaired, replaced with new ones or changed with another more esthetic and invasive treatment, if necessary. Although, not expected to be failure-free-long-lasting restorations, composite laminate veneers

are preferred due to their low cost, relatively non-technique sensitive and non-time consuming, minimally invasive application manner.

The use of direct laminate veneer technique associated with adhesive bonding systems and composite resin materials in these cases, has shown to be a good esthetic alternative for the rehabilitation of anterior teeth affected by enamel hypoplasia. The initial results have shown to be satisfactory for both patients and treating team without scarifying healthy tooth structure.

Conclusion

Composite laminate veneering technique should be considered the primary treatment option for enamel hypoplasia cases in an urgent attempt to improve the life quality of this group of patients. This treatment modality is relatively easy to apply, is completely a chair-side application and can be completed in just 1-2 sessions. It is not expensive and can be repaired, replaced or changed at any time, if necessary. The initial results of this two-case-report have conformed composite laminate veneers to be a good alternative for the esthetic rehabilitation of anterior teeth affected by enamel hypoplasia and for improving the life quality of such patients.

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