CASE REPORT

ESTHETIC REHABILITATION OF ANTERIOR TEETH WITH DEVITAL BLEACHING AND PORCELAIN RESTORATIONS
Gökçe Meriç, Simge Taşar, Mutahhar M. Ulusoy

ABSTRACT

This paper reports esthetic rehabilitation of a discoloured maxillary incisor of a 18 year old female patient carried out on a patient by bleaching, porcelain laminate veneers, crown and bridge silicate-ceramic restorations. The patient was very satisfied with the result and had no complaints during 2 years of follow-up.

Key words: Bleaching; IPS Empress II; Esthetic

Introduction

Esthetic treatment for anterior segment represents a great challenge to the dental clinician. The IPS e.max ceramic system, heir apparent to the IPS Empress 2 system, combines the advantages of zirconium oxide ceramics with the excellent esthetic qualities of silicate ceramics. Discolored teeth suffering from poor aesthetics can be successfully whitened by bleaching techniques. This paper reports esthetic rehabilitation of a discoloured maxillary incisor of a 18 year old female patient carried out on a patient by bleaching, porcelain laminate veneers, crown and bridge silicate-ceramic restorations.

Case Report

An eighteen year old woman reported with a chief complaint of dark maxillary central incisor and poor esthetics due to improper restorations and a missing tooth 24 (Figure 1). During the first session, digital photographs and radiographs (Figure 2) were obtained and alginate impressions were taken. No periodontal problems were found. The cross-bite originated from unilateral discrepancy between the size of the larger mandible and the maxilla was observed. After relevant data were collected, the treatment options were discussed with patient. She did not want to have orthodontic treatment and preferred to get a good esthetic in a short period time. The following treatment plan was adapted: devital bleaching to the tooth 11, replacing the previous abraded composite restorations of teeth 13,12,21, and 22, full crown restoration of tooth 11, laminate restorations of teeth 13,12,21, and 22, 3-unit fixed partial denture to teeth 23, 24, and 25

Devital Bleaching: Previous endodontic treatment of the tooth was found to be adequate. However filling cement inside the pulp chamber had caused the discoloration. The remnants of the filling material were removed. A mixture of sodium perborate and 3% hydrogen peroxide was applied to a cotton pellet and was placed in the pulp chamber and the tooth was restored temporarily with glass ionomer cement. After 7 days the color of the tooth was recorded as satisfactory (Figure 3). The solution was removed from the pulp chamber. The final restoration was completed by using composite resin.

Teeth Preparations: The previous composite restorations were removed and replaced with new ones. For the laminate veneer restorations, incisal overlap preparation was done due to the esthetic advantages. The laminate preparations extend- ed in only the enamel borders. Preparation of full crown was done with 2 mm insial and axial reduction with the chamfer edge. Acrylic resin, indirect provisional restorations was cemented over all prepared teeth.

Fabrication and cementation of restorations: The restorations were fabricated with lithium disilicate-based ceramic to provide maximum esthetics. All the prostheses were fabricated by using IPS e.max Ceram. The teeth were prepared by hydro-furoic acid etching at concentration 9.5%, silane was applied, then the restoration were cemented with a composite resin, Variolink II base and transparent catalyzer (Ivoclar®) (Figure 4). The patient had been examined clinically for 2 years. During that time, the marginal integrity of the restorations was maintained and no inflammation was observed. The restorations had been showing successfully esthetic throughout the 2 years (Figure 5).

Discussion

The restoration of anterior teeth is a difficult task. Currently there are many different ceramic systems that can be used to achieve high esthetic results. These include metal-ceramics with porcelain margins, Dicor, In-Ceram, Cerestore, Hi-Ceram, IPS-Empress, Cerapearl, Optec, and CAD/CAM ceramics. While metal-ceramics have been used for more than four decades, the quest for a material that transmits and refracts light like a natural tooth has inspired research into all-ceramic restorations. Due to the diversity of its components, porcelain is considered an optically heterogeneous material, i.e. it is transparent medium containing small particles with different refractive indexes. This leads to the diffusion of light in many directions when it is shine on each of the component, diminishing the intensity of the transmitted light. The interaction of light and matter are of great importance for esthetic restorations, as they allow a faithful reproduction of the properties of natural dentition. Bleaching on a highly discolored tooth is essential for good esthetic before restoring tooth with lithium disilicate-based ceramic due to the light transmission properties. However some studies, reported an increase of enamel porosity, a loss of mineral content, and a loss of prismatic form after bleaching plus a substantial reduction in resin composite bond strength. We preferred full crown restoration instead of laminate restoration after the bleaching due to the reduced bonding properties of the enamel surface.
Conclusion
In conclusion the use of lithium disilicate glass-ceramic restorations enables to restore anterior region while achieving good esthetic results.

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References


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